Navajo Linguistics: Part III

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0. Counterexamples and explanations in Navajo linguistics. In earlier parts of this study, it was emphasized that the grammar which a linguist constructs for the language he studies is a theory about something which he cannot directly observe -- it is a theory about a certain kind of knowledge which, because of our relatively limited understanding of how the brain stores and organizes knowledge, can only be studied "indirectly", i.e., by observing the behavior which it enables people to perform. The linguist, therefore, does not study the brain, as does the neurophysiologist; rather he studies examples of native speakers' linguistic performance. His data include, of course, a great many actual linguistic forms (words, sentences, and the like) but they also include, as an extremely important part, native speakers' intuitions concerning the meanings and acceptability of linguistic forms. Often it is the case that a linguist works on a language of which he is himself a native speaker -- in this case, he has the decided advantage that he can examine his own linguistic intuitions. But it is also common for a linguist to study a language which he does not speak natively, in which case he must rely on the linguistic intuitions of others. In either case the study of linguistic knowledge is necessarily indirect. The linguist cannot claim to describe linguistic knowledge, but only to construct a theory about it. To the extent that a linguistic theory -- or grammar, as it is normally called -- is successful in describing the observed facts about a language, it can be regarded as a reasonable hypothesis about the actual linguistic knowledge which is, in some as yet imperfectly understood way, built into the brains of native speakers of the language.
The situation which a linguist faces is much the same as that faced by any scientist; and this in turn is, in many respects, the same as the situation faced by all of us, whether we claim to be scientists or not, as we strive to understand the world in which we live. We are often faced with the fact that appearances are deceiving -- i.e., with the fact that the true nature of things in the world is often quite different from what our senses lead us to believe. Our senses and every day experience tell us one thing about a particular substance or object, and then suddenly we are confronted with some behavior on its part which directly contradicts what our senses and experience told us in the first instance. For example, our common sense understanding of liquids is entirely consistent with our knowledge that when four quarts of water are mixed together, their combined volume is a gallon; but it is inconsistent with the fact that when two quarts of water are mixed with two quarts of alcohol, the resulting volume of liquid is less than a gallon. Our ordinary experience with liquids simply provides no explanation for this behavior of water and alcohol in mixture. To attempt an explanation, we must revise our beliefs about the nature of liquids -- we must propose some hypothesis or theory about the true nature of water and alcohol which is not obvious from their superficial appearance.

We might look upon our common sense understanding of a given phenomenon as being, so to speak, an initial theory about it. An incident or piece of behavior which contradicts this common sense understanding can be called a counterexample to the initial theory. Thus, for instance, the behavior of water and alcohol is a counterexample to our common sense expectation that liquids will mix summatively -- i.e., that when two liquids are mixed, the resulting volume will be an exact sum of the original two. Let us assume that our initial theory about the nature of liquids is that they are "continuous" -- that is to say, there are no "spaces" within them; so when a certain quantity of a liquid, occupies a given volume, it fully occupies that volume, there is no room for anything else within that same space. This view of liquids is consistent with the vast majority of our everyday
experiences -- e.g., if a quart of water is poured into a container which already contains a quart, the resulting amount is two quarts; if a large stone is put into a bucket which is brim-full of some liquid, the bucket overflows; and so on. However, the view that liquids are continuous in this sense is definitely not consistent with the known behavior of alcohol and water. If liquids were continuous, i.e., had no space within them, then a quart of alcohol mixed with a quart of water should yield exactly two quarts of a mixture -- but they do not. In other words, the theory that liquids are continuous leaves something unexplained. Let us therefore consider an alternative theory according to which liquids are composed of tiny particles with empty spaces between them. With such a theory, it would be possible to explain the particular behavior of water and alcohol in very roughly the following way: the particles which make up alcohol and water are of such a nature that, when the two substances are mixed the particles of one are absorbed into the other and occupy the spaces between the particles of which it is composed. The exact details of what happens in the mixture are not so important. The point is that this alternative theory about the composition of liquids enables us to suggest a reasonable explanation for the behavior of alcohol and water. And if we extend the "particle" theory to embrace all matter, not just liquids, it enables us to explain a great many other phenomena with which we are familiar -- e.g., the fact that certain solids, like salt and sugar, dissolve in water; the fact that gases diffuse when released into the air; and many other such facts. This conception of matter is not new, of course.-- in fact, it is the atomic theory of matter first developed by the materialist Greek philosophers more than two thousand years ago; it is now massively supported by evidence of all kinds, including the electron microscope which enables us actually to observe some of the particles of which matter is composed. It is important to bear in mind that, prior to
final confirmation by the electron microscope, the atomic theory of matter, which held that substances were composed of countless fantastically small and discrete particles, was a highly abstract conception of matter. It was abstract because it was not at all suggested by superficial appearances or by the ordinary experiences of people. It was, in the classical sense, a theory and, as such, it was supported by the success it enjoyed in providing explanations for aspects of the behavior of matter which were a mystery under the initial theory, or common sense view, that matter was continuous. As Jerrold J. Katz puts it, the atomic theory "originated as a purely hypothetical postulation. Initially, it could only have seemed the most extravagant of fancies. It proposed to populate the universe with unbelievably many new objects. Such objects were, moreover, supposed to be invisible and yet to provide the true understanding of visible phenomena. Finally, to add insult to injury, the concept flew in the face of the plain testimony of sense experience. But when it proved to yield better predictions and explanations of the observable behavior of physical objects and substances than the concept of continuity, it received scientific acceptance. The continuity hypothesis, which once must have seemed the last word in sober science, became relegated to the status of a depiction of appearance." (The Underlying Reality of Language, Harper, 1971 p.3)

In linguistics, no less than in physics and chemistry, counterexamples play an important role in advancing our understanding of the phenomena which we investigate. In our attempts to arrive at a conception of the linguistic knowledge which enables people to speak and understand the sentences of their native language, we propose various theories and test them against our data. If the data include a counterexample to a particular theory, then an alternative theory must be sought which will succeed in explaining the counterexample (as well as the total range of data which the original theory explained, of course). Such an alternative might involve only a slight revision of the original theory, an enrichment of it, or possibly even complete abandonment of it,
depending upon the situation. It is typical of linguistic work that theories are constantly being formulated and then overthrown to be replaced by alternative theories constructed in an attempt to account for some counterevidence or other; these alternatives are in turn overthrown by new counterevidence, and so on. But if this were not the case -- i.e., if we actually had all the answers -- there would be no field of linguistics. So the counterexample is not something that linguists deplore. Instead, it is welcomed and recognized as a valuable tool in the effort to achieve increasing depth of understanding in linguistic matters.

In the ensuing pages, I will present examples of preliminary hypotheses concerning aspects of Navajo grammar. I will confront each hypothesis with a class of counterexamples and then proceed to reconsider the preliminary hypothesis in an attempt to supplant it with an alternative which will succeed in explaining the counterexamples. As the discussion proceeds, it will become clear that it is necessary to postulate structures and mechanisms which are abstract in the sense that their existence is not immediately obvious from the superficial appearance of linguistic forms.

1. The first example which I will use is drawn from the realm of phonology; it involves an extension of an aspect of Navajo phonology briefly introduced in part II of this study. Recall from that discussion that there exists in Navajo a phonological rule of devoicing which accounts for alternations of the type represented in the following table:
<table>
<thead>
<tr>
<th>Without prefix</th>
<th>With prefix</th>
</tr>
</thead>
<tbody>
<tr>
<td>saad</td>
<td>bizaad</td>
</tr>
<tr>
<td>lóód</td>
<td>bilóód</td>
</tr>
<tr>
<td>hosh</td>
<td>bighosh</td>
</tr>
<tr>
<td>shéé'</td>
<td>bizhéé'</td>
</tr>
</tbody>
</table>

What these examples involve, of course, is an alternation between voiced and voiceless continuants (or fricatives, as they are more often called). Thus, certain nouns show an initial **voiced fricative**

\[ z \]
\[ l \]
\[ gh \]
\[ zh \]

when immediately preceded by a possessive prefix (like /shi-/, /bi-/, /ni-/, etc.), but they show the corresponding **voiceless fricative**

\[ s \]
\[ t \]
\[ h \ (actually \ [x] \ ) \]
\[ sh \]

when not preceded by a prefix — i.e., when preceded instead by word boundary (often represented in phonological rules by # or ##). In the original discussion of this alternation, it was assumed that the underlying phonological representations of nouns of this type had the voiced fricative initial and that this initial was turned voiceless by application of a rule of roughly the following form:
[consonant]  
[fricative]  
[voiced]  
→  
[voiceless]  
/  
/

Or to state this in prose: a voiced fricative consonant becomes voiceless when immediately preceded by word boundary (i.e., when it is word-initial). According to this rule, an underlying representation like

/  
/#  
## zaad  
/

is converted to a phonetic representation

[  
/#  
## saad  
]

but an underlying representation of the form

/  
/bi-zaad  
/

will not be affected since the initial voiced fricative is not here immediately preceded by word boundary.

In the present discussion, I will continue to assume that this account of the voicing alternation in initial fricatives, for the cases so-far examined, is essentially correct. What I wish to do at this point is to enrich the data base by considering the corresponding phenomenon in verbs. The process which applies in the case of verbs is identical to that which applies in nouns -- i.e., stem-initial fricatives are devoiced -- but the environment in which the devoicing occurs is somewhat different.

Consider the stem-initial alternations in the following imperfective verb forms -- the stem-initial consonant is underlined in each form:

<table>
<thead>
<tr>
<th>3rd person</th>
<th>1st singular</th>
</tr>
</thead>
<tbody>
<tr>
<td>dizééh</td>
<td>dissééh</td>
</tr>
<tr>
<td>yayligiíd</td>
<td>yaassigíd</td>
</tr>
<tr>
<td>3rd person</td>
<td>1st singular</td>
</tr>
<tr>
<td>------------</td>
<td>-------------</td>
</tr>
<tr>
<td>niizíih</td>
<td>niissíih</td>
</tr>
<tr>
<td>iiçóóí's</td>
<td>iissóóí's</td>
</tr>
<tr>
<td>yileeeh</td>
<td>yishleeheh</td>
</tr>
<tr>
<td>nil'</td>
<td>nish'h'</td>
</tr>
<tr>
<td>nahale'</td>
<td>nahash'ne'</td>
</tr>
<tr>
<td>k'i'dilé</td>
<td>k'i'dishlé</td>
</tr>
<tr>
<td>adizsheeh</td>
<td>adishsheeh</td>
</tr>
<tr>
<td>yózhí</td>
<td>yíníshshí</td>
</tr>
<tr>
<td>dizhah</td>
<td>dishshah</td>
</tr>
<tr>
<td>yigháád</td>
<td>yishxáád</td>
</tr>
<tr>
<td>yiyíghas</td>
<td>yiixas</td>
</tr>
<tr>
<td>yighożh</td>
<td>yishxozh</td>
</tr>
<tr>
<td>yighá'</td>
<td>yishxé'</td>
</tr>
</tbody>
</table>

These verb forms exhibit the same alternations that the nominal forms did -- i.e.,

\[
z \sim s \\
1 \sim \dagger \\
zh \sim sh \\
gh \sim x.
\]

Specifically, this is an alternation in voicing. Notice that the stem-initial fricative is voiced if a vowel immediately precedes it, as is the case in the third person forms. But the stem-initial fricative is voiceless if the first person singular subject prefix /sh-/ (sometimes appearing as phonetic [s-] ) immediately precedes it. Now notice that the first person singular prefix itself consists of a voiceless fricative; it seems reasonable to suggest that it is the voicelessness of this prefix which causes the immediately following stem-initial fricative to devoice. In other words, it could well be the case that a stem-initial voiced fricative will devoice
if it is immediately preceded by any voiceless sound, no matter what prefix that voiceless sound belongs to.

Our hypothesis is that a stem-initial voiced fricative will devoice if immediately preceded by a voiceless sound. We can test the hypothesis by constructing other verb forms in which a voiceless segment immediately precedes a stem-initial fricative. Recall that the second person nonsingular subject prefix has the underlying shape /oh-/ — i.e., it ends in a voiceless segment. Therefore, if we construct the second person nonsingular forms for the verbs exemplified above, we will bring a voiceless sound into contact with the stem-initial fricative of the verb stem. If our prediction is correct, this stem-initial should appear as voiceless. As the following table shows, our prediction is in fact correct:

<table>
<thead>
<tr>
<th>2nd non singular</th>
</tr>
</thead>
<tbody>
<tr>
<td>dohséén</td>
</tr>
<tr>
<td>yaohsíid</td>
</tr>
<tr>
<td>noohsíih</td>
</tr>
<tr>
<td>oohsíos</td>
</tr>
<tr>
<td>wohsíeh</td>
</tr>
<tr>
<td>nohís</td>
</tr>
<tr>
<td>nahohís</td>
</tr>
<tr>
<td>k'í'dohís</td>
</tr>
<tr>
<td>adohsheeh</td>
</tr>
<tr>
<td>yinóhshí</td>
</tr>
<tr>
<td>dohshahí</td>
</tr>
<tr>
<td>wohxásád</td>
</tr>
<tr>
<td>woohxás</td>
</tr>
<tr>
<td>wohxozh</td>
</tr>
<tr>
<td>wohxís</td>
</tr>
</tbody>
</table>

Our hypothesis is further supported by the fact that the classifier /i-/ causes an immediately following stem-initial fricative to devoice — it does so because it is itself a voiceless segment.
Thus consider the verb form, /yighozh/ 'he is ticklish' -- in this form, the stem-initial fricative is voiced, i.e., [gh], because it is immediately preceded by a vowel. However, in the transitive counterpart of this verb, the classifier /i-/ appears immediately before the stem, and since it is voiceless, it causes the stem-initial fricative to devoice, giving /yiίxozh/ 'he tickles him', with [x] instead of [gh].

These observations seem to indicate that we are justified in making the general statement that a stem-initial voiced fricative will devoice if immediately preceded by a voiceless segment. Assuming this to be the case, we might express the generalization in a rule of very roughly the following from:

\[
\begin{bmatrix}
\text{consonant} \\
\text{fricative} \\
\text{voiced}
\end{bmatrix}
\Rightarrow [\text{voiceless}] / [\text{voiceless}].
\]

This rule can be read as follows: a voiced fricative becomes voiceless if a voiceless segment precedes it.

As stated, the devoicing rule will operate on an underlying representation like

/ni-sh-1\texttext{/}

and convert it to the phonetic (i.e., actually pronounced) form

[nish\texttext{]}]

And similarly, it will convert underlying

/yi-i-ghozh/

into phonetic

[yiίxozh]

Now the statement embodied in this rule has an obvious corollary to the effect that a stem-initial fricative will remain voiced if it is preceded by a voiced segment. A part of this corollary
is confirmed by the fact that the stem-initial remains voiced after a vowel as in such verb forms as /yighozh/, /yighë/, /nilë/, /yilee/, and so on, but it is also confirmed by the fact that stem-initial fricatives remain voiced after the classifier /l-/ as in verb forms like

áhodilzééh
ákálzis
sodilzin
alzhish
naalzheeh
ádilzhóóh
yilghal
haidilgháásh
hanálghííh

The stem-initial remains voiced here precisely because the classifier which immediately precedes it is itself voiced. And the corollary receives still further confirmation by such verb forms as

yizghas
deezghal
názghiz
náyiizlzáá'
nahazle'
yizloh

in which the stem-initial fricative remains voiced following the voiced alternate /z-/ of the si-perfective prefix. Finally, it should be noted that the 1-classifier, which is normally voiceless /w-/ is under certain circumstances voiced -- e.g., in the first person nonsingular, and in verb forms traditionally referred to as passives. When this voicing happens, an underlying stem-initial /gh/, for example, which would normally become voiceless [x] because of /w-/, instead remains voiced as predicted by the corollary to the devoicing rule. This is illustrated in the following table in which the left-most column has the /w-/ classifier and the middle and right-hand columns have the
voiced derivative / l-/: 

<table>
<thead>
<tr>
<th>3rd person</th>
<th>1st nonsingular</th>
<th>passive</th>
</tr>
</thead>
<tbody>
<tr>
<td>ayiixan</td>
<td>ahiilghan</td>
<td>abi'dilghan</td>
</tr>
<tr>
<td>nédillxaaβ</td>
<td>níidiilghaaβ</td>
<td>nábi'dilghaaβ</td>
</tr>
<tr>
<td>yiyiixash</td>
<td>yiilghash</td>
<td>bi'dilghash</td>
</tr>
<tr>
<td>néixéés</td>
<td>néiilghéés</td>
<td>nábi'dilghéés</td>
</tr>
<tr>
<td>yíixī'h</td>
<td>yiilghì'h</td>
<td>bi'dilghì'h</td>
</tr>
<tr>
<td>yiixoxh</td>
<td>yiilghoxh</td>
<td>bi'dilghoxh</td>
</tr>
</tbody>
</table>

These forms exemplify both the devoicing rule and its corollary.

The devoicing rule, together with its corollary, constitutes a specific hypothesis about Navajo phonology. As such, it makes a certain prediction which can be tested against actual data. That is to say, it could be falsified by a counterexample. The prediction that the devoicing rule makes is that a voiced fricative will always be devoiced if immediately preceded by a voiceless segment -- thus, a counterexample would be a phonetic representation of some linguistic form in which a voiced fricative appeared immediately following a voiceless segment; such a sequence should not be possible, according to the hypothesis, because the devoicing rule would operate to change the voiced fricative to voiceless. It happens, however, that such sequences do occur. In fact, there is a whole class of counterexamples to the hypothesis. Consider, for instance, the following first person singular verb forms.

<table>
<thead>
<tr>
<th>áhodíiszééh</th>
</tr>
</thead>
<tbody>
<tr>
<td>sódíszin</td>
</tr>
<tr>
<td>ákászis</td>
</tr>
<tr>
<td>naashzhééh</td>
</tr>
<tr>
<td>ádíshzhééh</td>
</tr>
<tr>
<td>ashzhish</td>
</tr>
<tr>
<td>yishghal</td>
</tr>
<tr>
<td>yínishghé</td>
</tr>
<tr>
<td>dishghosh</td>
</tr>
</tbody>
</table>

In these forms, the stem-initial voiced fricative remains voiced
despite the fact that it is immediately preceded in phonetic representation by the first person singular subject prefix, which is itself a voiceless fricative.

This is a clear case of a counterexample. Our initial hypothesis predicted that sequences of the type [sz], [shzh], [shgh] could not appear in the phonetic representation of Navajo linguistic forms because the devoicing rule would convert them to [ss],[shsh], and [shx]. But the first person verb forms cited above show that the prediction does not hold one hundred percent. Consider now the second person nonsingular forms of these verbs -- they also constitute counterexamples to the initial hypothesis:

áhodooolzééh
sodołzin
ákóólzis
naolžheeh
ádóólzheéh
ožzhish
wožghal
yinožghé
dožghosh

These are counterexamples to the prediction that sequences of the type [lz ], [lzh], [lgh] would be eliminated from phonetic representations of Navajo forms by operation of the devoicing rule, which would replace them by [ls ], [lsh], and [lx].

The question now is this. Is there any way in which these counterexamples can be explained? Or must we give up the otherwise very suggestive hypothesis that the devoicing rule is a legitimate part of Navajo phonology? One way to approach this question is to determine what it is that the exceptional forms have in common, as opposed to the forms which conform to the initial
hypothesis. Notice first, that all of the exceptional forms belong to verb themes which show the l-classifier (i.e., the voiced classifier /l-/ ) in other persons. Consider, for example, the third person forms already cited to illustrate the retention of voicing in stem-initial fricatives following the l-classifier; and consider the following second person singular forms.

áhodiilzéélh
sodílzin
ákánílizís
nanilzheeh
ádílizhéélh
dízhish
nilghal
yínílghé
dílghosh

By contrast, the verb forms in which the stem-initial fricatives devaňe, as predicted, belong to themes which have either the zero-classifier or the i-classifier. Could this difference be responsible for the difference in the behavior of the stem-initial fricatives?

There does indeed seem to be a connection between the classifier and the behavior of stem-initial fricatives in regard to voicing. Consider, for example, the first and third person singular forms of the transitive verb theme /li-ň-ghash/ 'to bite'

yílishxash
yíyílixash

The third person form here reveals that the classifier is the voiceless one /ň-, although its presence cannot be detected in the first person form. In any event, these forms are not exceptional, since the stem-initial fricative is devoiced, as expected. Now it happens in Navajo that in reflexive verb forms, the i-classifier is changed to /l-/ , i.e., to the voiced counterpart. So, the reflexives of the above two verb-forms will have the classifier /l-/ instead of /ň-/. Thus, if there is a
genuine connection between the classifier which a verbal theme
takes and the voicing-behavior of stem-initial fricatives, then
it would be reasonable to expect reflexive verb-forms derived
from themes with the 1-classifier to exhibit the same exceptional
behavior as the 1-classifier themes cited earlier. This expectation
is correct, as the following first person singular and second person
nonsingular forms show:

ádiishghash
ádoosinghash

That the classifier here is /l-/ is shown by the third person
reflexive form /ádiilghash/.

In short, there appears to be something of substance in the
idea that the classifier is in some way or other responsible for
the exceptional behavior we are considering -- this must be so,
because the single verb stem /-ghash/ 'bite' behaves in two
different ways depending upon the classifier it occurs with; it
behaves normally in themes with the 1-classifier, and it behaves
exceptionally in themes with the 1-classifier.

We are on our way to finding an explanation for the counter-
examples to our initial hypothesis. But precisely what is this
explanation, and how should it be incorporated into our description
of Navajo phonology? We could, for example, say simply that the
devoicing rule applies regularly in all verbal themes except
those which use the classifier /l-/. However, this does not seem
particularly satisfying as an explanation, because it does not
help us to understand the cause of the exceptional behavior.
Why, for instance, does the 1-classifier do it instead of, say,
some vowel in the stem? What we would like is some explanation
which is more directly related to the 1-classifier. For example,
could we formulate an explanation according to which the 1-classifer
actually prevents the devoicing rule form applying? This would be
excellent. But when we look at the exceptional forms, we see that
the l-classifier is evidently not even present in them.
In a form like

dishghosh

there appears to be no classifier at all between the subject
prefix /sh-/ and the stem-initial fricative; and in the corresponding
second person nonsingular form

do\u00f8ghosh

the classifier appears to be /\u0154-\u00f0/ instead of /l-\u00f0/. And how could
the l-classifier prevent the devoicing rule form applying if it
is not actually present in the verb form? The reader has probably
anticipated the answer. This is clearly an instance in which we
are justified in suspecting that the superficial appearance of
things is obscuring the underlying reality of the matter. Recall
that it was proposed in Part I of this study that verbs which show
the l-classifier in the third person and in the second person singular
have an underlying abstract representation in which the /l-\u00f0/ is
present in all persons, whether or not it actually survives in
the form as it is pronounced. According to this conception of
Navajo verb forms, for example, the first person singular of the
verb /na-l-nish/ 'to work' is /na-sh-l-nish/. This abstract
representation is then submitted to various phonological rules --
among these is one which deletes the classifier thereby producing
an intermediate representation /na-sh-nish/ in which no classifier
appears between the subject prefix and the stem-initial consonant.
Similarly, the second person nonsingular form is underlyingly
/na-oh-l-nish/. The phonological rules operate on this to devoice
the classifier and to delete the final /h/ of the second person
nonsingular subject prefix /oh/ -- these processes yield an output
which makes it appear, counterfactually, that the classifier is
/\u0154-\u00f0/ rather than /l-\u00f0/. Now, suppose we accept this abstract
conception of Navajo verbs. Consider, then, what the underlying
representation of one of the exceptional verb forms would be --
consider, for example, the first person singular and the second
nonsingular of the verb /di-l-ghosh/ 'to shout':

di-sh-l-ghosh

di-oh-l-ghosh

If these abstract representations are taken into consideration, it makes perfect sense to say that the 1-classifier, does in fact prevent the devoicing rule from affecting the stem-initial fricatives -- the classifier actually stands in the way of the rule; because of the presence of the classifier, the stem-initial fricative is not immediately adjacent to the voiceless segment which would otherwise devoice it. That is to say, the /sh/ and /h/ of the subject prefixes cannot devoice the stem-initial /gh/ because of the 1-classifier is in the way. And since the 1-classifier is voiced, the stem-initial fricative itself remains voiced, as expected from the corollary to the devoicing rule.

This reasoning seems to be quite reasonable. But in order to make everything work out right, we still have to face some problems. We know, for example, that the 1-classifier gets deleted following the first person subject prefix /sh/- -- this happens not only in the forms we have been considering here, but also in cases where the stem does not begin in a fricative. In fact, there is a general rule whereby a classifier, whether it is /l/- or /i/-, gets deleted between /sh/- and a following consonant. This accounts for why no classifier appears in such first singular verb forms as /yishchin/ and /yishdee/, even though the corresponding third person forms, /yilchin/ and /yildee/, do show a classifier. Now if the classifier gets deleted from an underlying form like /di-sh-l-ghosh/ thereby changing it to /di-sh-ghosh/, then what is to prevent the devoicing rule form applying to this derived from to give the incorrect /dishxosh/? And there is a similar problem associated with the second person nonsingular forms. We know that there is a rule which causes the 1-classifier to devoice -- in fact, it makes sense to say that this is the same devoicing rule we have been discussing all along. This rule will operate on an underlying form like /na-oh-l-nish/ to derive
an intermediate form [na-oh-i-nish]. And then another rule, call it h-deletion, will operate to delete the final /h/ of the second person nonsingular prefix /oh-/ . This rule applies generally wherever the prefix /oh-/ precedes a classifier which is followed by a stem initial consonant -- it doesn't matter whether the classifier was originally /l-/ or /l-/; in either case the /h/ will delete, which accounts for why the second person nonsingular prefix has no final /h/ in such verb forms as /woλ̂χin/ and /woλ̂deel/, even though it retains its final /h/ in forms like /wohcha/ where the classifier is zero. Now if the classifier gets devoiced in a verb form like /di-oh-l-ghosh/, thereby changing it to [di-oh-l-ghosh], what then prevents this [l̃] from causing the stem initial fricative to devoice as well? If this did happen, then the phonetic representation of this verb form would be */doξ̂xosh/ instead of the correct /doξ̂ghosh/.

In order to solve these problems, we must not only think in abstract terms about the underlying representations of verb forms, but we must also think in somewhat abstract terms about the precise way in which our phonological rules apply. We now have three phonological rules to keep in mind. One of these is devoicing, for which a formulation has already been suggested. Another is classifier deletion, which might be formulated as follows, very roughly:

\[ \textit{l} \rightarrow \emptyset / \textit{sh-} \_ \_ - C \]

That is: /l/ is deleted (i.e., changed to null or zero) between the prefix /sh-/ and a following stem-initial consonant. And finally, there is the rule of h-deletion, which might be formulated in roughly the following way

\[ \textit{h} \rightarrow \emptyset / \_ \_ - \textit{l} - C. \]

That is: /h/ is deleted when followed by the classifier plus a stem-initial consonant.
Let us refer to the two new rules as deletion; this simplifies the situation somewhat and permits us to proceed as if there were only two rules involved -- namely, devoicing and deletion -- and it does not do violence to the facts which are crucial to the problem at hand. Our concern now is with the way in which the two processes apply in deriving surface phonetic representations from the abstract underlying representation of Navajo verb forms. In order to operate correctly, the two rules must be strictly ordered as follows:

1. devoicing
2. deletion

That is to say, if a given form undergoes both processes, then devoicing must apply before deletion -- never the reverse order. Furthermore, a form may not undergo the same rule twice.

To see how these rules operate, consider the form

/di-sh-l-ghosh/

The devoicing rule operates first to produce the intermediate representation

[di-sh-l-ghosh].

Now, since devoicing has applied, the form cannot be submitted to the same rule again. Instead, the deletion rule applies to delete the classifier, yielding

[di-sh-ghosh]

which is the correct surface representation. Notice how this accounts for the fact that the stem-initial remains voiced. In the underlying form, the stem-initial fricative is not immediately preceded by a voiceless segment; it is preceded by the voiced l-classifier. So when the devoicing rule applies, it devoes the classifier and leaves the stem-initial voiced. And since our ordering principle stipulates that no rule can apply twice to the same form, the devoicing rule never gets a chance to affect the stem-initial fricative, so it remains voiced throughout the derivation:
The same principles apply in the case of the second person nonsingular form of this verb. Starting with the underlying representation /di-oh-l-ghosh/, the devoicing rule applies first to give [di-oh-ɪ-ghosh], and next the h-deletion rule applies to give [di-o-ɪ-ghosh] -- this is ultimately converted to [doɪghosh] by a very general vowel-deletion rule not directly relevant to the present discussion. The point of both these derivations is that the stem-initial voiced fricative is never affected by the devoicing rule because it is protected from its effect by the l-classifier. According to our analysis of these forms, the l-classifier itself gets devoiced by a preceding voiceless segment, but since a rule may apply only once to a given form, the stem-initial fricative remains unchanged.

We began our discussion of this phonological example with a rather simple initial hypothesis -- namely, that Navajo has a rule which devoices a stem-initial voiced fricative if it is immediately preceded by a voiceless segment. We saw that this initial hypothesis was inadequate in that it made a prediction which can be shown to be false by virtue of a particular class of counterexamples -- namely, the first singular and second nonsingular forms of l-class verbal themes. In our efforts to explain these counterexamples, we were led to a somewhat more abstract conception of Navajo phonology than that which seemed necessary in the first instance. Specifically, for certain verb forms, we were led to postulate an abstract representation containing an l-classifier which does not appear as such in actual pronunciation.
Moreover, we were led to develop a conception of rule interaction according to which rules (certain rules at least) are ordered. Notice that our explanation of the counterexamples does not totally overthrow the initial hypothesis, for in the new theory it is still postulated that Navajo possesses a devoicing rule. The counterexamples did not force us to abandon the rule itself; rather they led us to look deeper into the verbal system in search of a reality which is not evident from the surface appearance of things.

It appears now that we have a viable hypothesis which accounts not only for the facts accommodated by the initial hypothesis but also for the counterexamples which we encountered when we proceeded to test the initial hypothesis. Now the new hypothesis itself makes a prediction which should be tested also. It predicts that any voiceless segment which is separated from a stem-initial fricative by the l-classifier will fail to transmit its voicelessness to the stem-initial. The examples we have examined so far involved only the first person singular prefix /sh-/ and the second person nonsingular prefix /oh-/ . But there is another prefix which is relevant to our hypothesis. Recall that the si-perfective mode prefix has an alternative in certain third person verb forms which consists of a voiceless segment -- i.e., /s-/ (alternating with [sh-] under certain conditions). Our hypothesis predicts that this prefix will fail to devoice a stem-initial fricative in the third person perfective of l-class verbal themes. As the following third person perfective forms show, this prediction is correct-- the stem-initial (underlined below) remains voiced, even though it is preceded by a voiceless segment in the phonetic representation:

ākászas
k'ídééshzhoozh
naashzhe'e'
deeshhiz
deeshhal
That the 1-classifier is involved here is shown by the corresponding second person singular forms, in which the classifier can actually be seen immediately preceding the stem-initial:

ákásínílzas
k'ídínílzhoozh
nishínílzhee'
dínílghiz
dínílghod

Thus, the new theory seems to pass at least the most elementary test we are able to construct. The question now is whether the theory is adequate to handle other observations which are relevant to it. Or are there lingering counterexamples to the predictions which the theory makes?

Like the initial hypothesis, our new theory predicts that a stem-initial voiced fricative will be devoiced when preceded by a voiceless segment. However, it states that this will happen only if the stem-initial is preceded by a voiceless segment in the underlying representation of verb forms. As formulated, one prediction that this theory makes is that a stem-initial fricative will appear devoiced in phonetic representation only if it is preceded by a voiceless segment. We saw that there were counterexamples in the opposite direction -- i.e., there were cases of a voiced initial preceded by a voiceless segment in phonetic representation -- and it is reasonable to ask whether there are counterexamples of the second type -- i.e., voiceless initials preceded by a voiced segment in phonetic representation. Consider, in this connection, the following third person imperfective verb forms -- the stem-initial is underlined:

yidišisás
haiśíwá
yiwięgoł
yišéén
yišqóq
yidíšíhood
Here the stem-initial fricatives are voiceless, but they appear to be preceded immediately by vowels, since vowels are voiced, not voiceless, these forms constitute clear counterexamples to the prediction that stem-initial fricatives will appear voiceless only when preceded by voiceless segments. Now how can we explain these counterexamples? Will they require abandonment of part or all of our hypothesis? Or is this simply another example in which the surface phonetic representation obscures some aspect of the underlying form? Let us pursue this last idea further. The best way to do this is to examine other forms of the verbs in question to see if they shed any light on the matter. Consider, therefore, the first person nonsingular forms corresponding to the third person ones cited above:

\[
\begin{align*}
diilzáás \\
haiilzíid \\
yiilzół \\
yiilzhééh \\
yiilzhqóqh \\
diilzhhood
\end{align*}
\]

Here, suddenly, the stem-initial fricatives are voiced, exactly as we should expect from the fact that they are immediately preceded by the voiced segment /l/. So, what causes the voicelessness in the third person forms? Could it be that there is actually a voiceless segment lurking in the underlying representation which causes the stem-initial to devoice? And, if so, what could that segment be? Recall that the first person nonsingular subject prefix causes an ɨ-classifier to become voiced. Suppose we entertain the possibility that this is what is responsible for the /l/ which shows up in the first person nonsingular forms. If this were in fact the case, then we would be justified in proposing that it is the ɨ - classifier which is responsible for the devoicing of the stem-initial fricatives in the third person forms. If we follow this suggestion, then we must also propose that the ɨ - classifier is deleted after it causes the stem-initial to devoice. Let us assume, therefore, that the underlying representation for a form like [yishqóqh] is something like
The devoicing rule applies to this form to derive the intermediate representation

[yi-ɨ-shôqôh]

and, finally, the new rule of ɨ-deletion converts this to

[yi-shôqôh]

which is the correct output. Similarly, according to this suggestion, the underlying representation of [yidisásás] would be

[yi-di-ɨ-zaás/,

which by the devoicing rule becomes

[yi-di-ɨ-sás],

which in turn becomes

[yi-di-sás]

by ɨ-deletion.

This suggestion seems reasonable; and, moreover, it allows us to maintain the devoicing rule which has served so well in the past. We are required only to add the ɨ-deletion rule. This new rule would delete [ɨ] specifically before [s] or [sh], not before [x], or a stop consonant. The question now is, how reasonable is it to propose that such a rule exists? It accounts for the exceptional forms just considered, but is there any other justification for it? The rule implies that the ɨ-classifier is always deleted before [s] or [sh]; if this is so, then we predict that there exist no verb forms in Navajo whose surface representations have the ɨ-classifier before a stem-initial [s] or [sh], since all such cases would be removed by the ɨ-deletion rule. So far as I am aware, this prediction is correct — and, to this extent, we are justified in positing the rule; otherwise, we would not be able to explain the fact that the sequences [ɨ-sh] never appear in the phonetic representations of Navajo verb forms.

The new class of counterexamples — namely, ɨ-class verbs whose stems begin in underlying /z/ or /zh/ — do not require us to abandon the theory we have been developing. Rather, they assist us in refining the abstract representation of verb forms
and the system of phonological rules by means of which the surface phonetic representations are derived. The underlying representations which we have postulated account for the devoicing of the stem-initial in verb forms like [yishq̂h] and the new rule of ʔ-deletion accounts for the absence of an overt classifier in such forms. The underlying representations also account for the sudden reappearance of a classifier in first person nonsingular forms like [yiilzhq̂h] -- the subject prefix here causes the ʔ-classifier to voice; and since the rule which would otherwise delete the ʔ-classifier only applies to the voiceless variety, the voiced [l-] remains in the phonetic representation. This last observation suggests another test for our hypothesis. Recall that a ʔ-classifier is also voiced when a verb is in the passive voice. If the verbal themes presently under consideration really do have the ʔ-classifier, than we should expect this classifier to voice, and therefore to resist deletion, in the passive. Again, this prediction is correct:

\[
\begin{align*}
\text{hab}i'\text{dilzi}f\text{id} \\
\text{bi}'\text{dilzo}f \\
\text{bi}'\text{dilzh}h\text{ééh} \\
\text{bi}'\text{dilzhood} \\
\text{bi}'\text{dilzhq̂h}.
\end{align*}
\]

Let us now consider how the rule of devoicing interacts with the rule of ʔ-deletion. As we saw in the derivation of [yishq̂h], devoicing must precede ʔ-deletion:

\[
\begin{array}{c}
/yi-ʔ-zhq̂h/ \\
\downarrow \\
/yi-ʔ-shq̂h/ \\
\downarrow \\
/yi-shq̂h/
\end{array}
\]

\[
\begin{array}{c}
\text{underlying} \\
\text{form} \\
\text{form derived} \\
\text{by devoicing} \\
\text{form derived} \\
\text{by ʔ-deletion.}
\end{array}
\]

Actually, this ordering follows automatically from the nature of ʔ-deletion itself -- the rule deletes the ʔ-classifier before [s]
or [sh], and such sequence can arise only by prior application of devoicing.

Recall that there is a rule of h-deletion which applies in certain second person nonsingular verb forms to delete the final /h/ from the second person nonsingular subject prefix /oh-/. How does this rule interact with ə-deletion -- does it precede or follow? The forms which are relevant to this question are:

dohsádd
haohsfíd
woohsół
wohshééh
dohshood
wohshoqn

Notice that the /h/ is not deleted in these forms. So we have to prevent it from applying in these cases. If h-deletion preceded ə-deletion, we would have the following derivation for the verb form whose underlying representation is /di-oh-ə-shood/ -- the devoicing rule would apply first to begin the derivation:

![Derivation Diagram]

[di-oh-ə-shood] form derived by devoicing
↓
[di-o-ə-shood] form derived by h-deletion
↓
[di-o-shood] form derived by ə-deletion

And, finally, we would get * [doshood] by the vowel-deletion rule alluded to earlier. But this form is incorrect--the /h/ was deleted and it should not have been. Evidently, therefore, h-deletion cannot precede ə-deletion. Suppose we try the opposite ordering:
At this point we attempt to apply h-deletion, but we see that we cannot, because the rule applies only when the /h/ is followed by the ı-classifier, and that has been removed by prior application of ı-deletion. And this is precisely the result we want. We can prevent h-deletion from applying these forms by ordering it after the rule of ı-deletion.

We have constructed a hypothesis which purports to account for the behavior of stem-initial fricatives in Navajo verb forms. The hypothesis is reasonably successful in accounting for the facts so-far brought into the discussion. In arriving at our present conception of this aspect of Navajo phonology we first proposed an elementary hypothesis which described a limited set of data. We then adduced a class of forms which proved to be counterexamples to the elementary hypothesis. In our attempts to explain these counterexamples and to arrive at a more adequate hypothesis, we were led to propose a somewhat more abstract conception of Navajo verb forms than was apparent from their surface appearance in phonetic representation. And in order to provide for the correct derivation of phonetic representations, we were led to a particular conception of how phonological processes interact -- specifically, we were led to propose that phonological rules should, in certain cases, apply in a particular order. These additional more abstract notions enable us to describe a wider range of phonological facts in Navajo than was possible under the elementary hypothesis -- we can say, therefore, that the more abstract conception of Navajo verb forms indicates a somewhat deeper understanding of them. And the process of seeking
explanations for counterexamples has been central in leading to this deeper understanding.

Before concluding this section, I would like to introduce some facts which cannot, as yet, be explained by the hypothesis as it is formulated to this point. These additional data constitute counterexamples to one of the implications of the hypothesis. I do not know how to explain the counterexamples, but I present them with the expectation that someone will eventually succeed in finding an explanation, thereby leading to an even deeper understanding of this aspect of Navajo verbal phonology.

Recall that the surface representations of 1-class themes in Navajo permit sequences such as [shgh], [shzh]; we explained the existence of such sequences by proposing an underlying representation in which the 1-classifier appeared between the stem-initial fricative and the voiceless segment to the left; this 1-classifier had the effect of "protecting" the stem-initial from devoicing. Now, one thing that this suggests is that whenever such exceptional sequences are found, there is always an 1-classifier involved. However, this turns out to be wrong, since so-called "neuter" verb forms like

nishzhóní
dinishghin

cannot be explained in this way. These forms show the exceptional sequences [shzh] and [shgh], but there is no 1-classifier involved. This can be seen from the second and third person forms in which no 1-classifier is present:

ńízhóní
nižhóní
diníghin
dighin.
There appears to be no classifier here (i.e., the classifier is zero). So there is no immediately obvious explanation for the failure of the stem-initial to devoice when the first person singular subject prefix /sh-/ immediately precedes it. The only hint that comes to mind is that this exceptional behavior has something to do with the fact that these forms are "neuters". This is supported by the observation that the expected devoicing does occur in the corresponding "active" forms, as the following example shows:

\[ \text{dinishxjih} \]

2. In this section I would like to discuss a problem from the domain of syntax. Like the phonology problem explored in the preceding section, this syntactic problem was briefly introduced in an earlier part of this study (Part I) -- it has to do with person and number agreement between the verb and the subject of a sentence.

One of the facts of Navajo grammar is that the verb must agree in person with the subject of the sentence in which it appears. What this means, specifically, is that the morpheme which appears in the subject prefix position in the verb word must correspond to the number and person of the subject. Thus, for example, if the subject of the sentence /shí/ 1st person singular, then the verb word must contain the 1st person singular subject prefix -- i.e., the prefix whose underlying phonological representation is /sh-/ -- as is the case in the simple sentence

\[ (1) \text{shí naashnish} \]

This sentence conforms to the rule of subject agreement, since the subject prefix /sh-/ corresponds to the person and number of the subject noun phrase /shí/. Similarly, if the subject of the sentence is /ni/ 2nd person singular, then the verb word requires the prefix /ni-/ in subject prefix position:

\[ (2) \text{ni nanilnish} \]

And if the subject is /nihí/ in the meaning 1st person non-singular, the verb word is required to contain the 1st non-singular prefix. This prefix actually has the underlying
phonological representation /lid-/; though the final /d/ is deleted in the majority of circumstances so that it appears in phonetic representation as /lii-/.

The following sentence illustrates 1st nonsingular subject agreement:

(3) nihɨ naaɨnish

If the subject of the sentence is /nihɨ/, in the meaning 2nd person nonsingular, the verb word is required to contain the 2nd nonsingular subject prefix, whose underlying phonological representation is /oh-/

(4) nihɨ naaɨnish

Finally, if the subject is third person, i.e., if it is the pronoun /bi/, or a nounphrase like /hastiin/ or /difí ashkii/, then the subject prefix position in the verb word remains unfilled — or, as some grammarians might say, it is occupied by a "zero" (i.e., phonologically null) prefix. This is the case in sentences like the following:

(5) (i) bi naalnish.
(ii) hastiin naalnish
(iii) difí ashkii naalnish.

In Part I, we attempted to provide a formal mechanism which would account for such facts as those represented in the sentences (1-5) by postulating that, in their most abstract representations, the verbal themes of Navajo contain no subject person markers at all and that the person markers should be inserted by a transformational rule of person agreement. This transformational rule had the effect of "copying" the person category from the subject and inserting it into the appropriate prefix position (i.e., directly in front of the classifier) within the verb word. In the present discussion, I will continue to assume that this idea is essentially correct. Accordingly, a sentence like (1) above will be said to have an underlying syntactic representation, or "deep structure" of, very roughly, the following form:
I have left some of the details out of this structural description, or "tree", in order to simplify our discussion somewhat. Basically, what is **abbreviated** in the above diagram is the exact representation of the subject noun phrase. It is represented here merely as NP dominating the 1st person singular pronoun. In an actual formal account of Navajo, the structural description would actually mention that the subject is a pronoun, rather than a noun, and that it is specifically 1st person singular -- i.e., these grammatical categories would be mentioned in the tree. However, for the present purposes, we can leave these specifications as "understood". In any event, the transformation of person agreement will apply to this abstract structure and duplicate the person-number categories

\[
\begin{bmatrix}
\text{1st person} \\
\text{ singular}
\end{bmatrix}
\]

into the appropriate position in the verb word. These categories are ultimately "spelled out" as the abstract phonological representation /sh-/. At this point in the derivation, the tree would be roughly

For a somewhat more careful account of the **subject person agreement**
rule, the reader can refer to Part I. The details are not particularly important for the present discussion; it is sufficient to understand that we are proposing that such a rule exists and that it accounts for the well-formedness --i.e., correctness-- of such sentences as (1-5). They are well-formed, "grammatical", to use current terminology, precisely because they conform to the rule of subject person agreement. And, correspondingly, such forms as the following are ill-formed, or "ungrammatical":

(6) (i) * shí nanilnish
    (ii) * nihí naashnish
    (iii) * ashkii nacínish

They are ungrammatical because they fail to conform to the subject person agreement rule. Our elementary hypothesis accounts both for the well-formedness of (1-5) and for the ill-formedness of (6) by stipulating that only person-number categories from the subject noun phrase can be duplicated in subject prefix position within the verb word. Or, to state this in a slightly different way, the only source for subject marking prefixes in the verb word is the subject of the sentence; according to our proposal, there is no way in which a subject prefix can get into the verb word except by the process which copies the person-number categories from the subject noun phrase.

The essential correctness of this conception of subject person agreement in Navajo is substantiated by a massive body of Navajo sentences -- the examples (1-5) are merely illustrative of the total set, which is in fact unlimited. However, in order to proceed in our investigation of Navajo agreement, we must extend our conception of the formal mechanism somewhat in order to accommodate "compound subjects". Notice, for example, that we cannot say that the only source for the 1st person nonsingular subject prefix /iid-/ is the pronoun /nihí/ 1st person nonsingular. Instead, we must say that any subject NP which belongs to the category 1st person nonsingular can be the source of the prefix /iid-/ in the verb word. For instance, the compound noun phrase /shí dóó ashkii/, although it does not contain the 1st nonsingular pronoun /nihí/, is nonetheless a 1st person nonsingular form. It is first person by virtue of the fact that it
contains /ší/ 1st person singular, and it is nonsingular by virtue of the fact that it consists of two singulars, and two singulars amount to a dual. Therefore, if /ší dóó ashkii/ appears as the subject of a sentence, the verb must contain the 1st nonsingular subject prefix, as it does in the following sentence:

(7) ší dóó ashkii neilnish

Thus, assuming that the deep structure of (7) is roughly

```
S
  NP
    NP  NP
      shí  dóó  ashkii
  adv  cDROP  stem
      na-  iid-  -l-  -nish,
```

the rule of subject person agreement must be understood as being capable of interpreting the compound subject noun phrase as 1st person nonsingular so that it will correctly copy the person-number categories

```
[1st person]
[nonsingular],
```

realised phonologically as /-iid/, into the subject prefix position in the verb word:

```
S
  NP
    NP  NP
      shí  dóó  ashkii
  adv  cDROP  stem
      na-  iid-  -l-  -nish.
```
And, in general, we must assume that our grammatical apparatus is capable of interpreting compound noun phrases by "adding up", so to speak, the categories of the individual conjoined items. Thus, the compound noun phrase /ashkii dóó at'ééd/ will amount to a third person dual, since it is composed of two singular third person noun phrases; the compound noun phrase /ni dóó nizhé'é/ will be interpreted as a second person dual, because it is composed of a singular second person plus a singular third person. In interpreting the joint person-number category of a compound noun phrase, the category of number is simply calculated additively -- two singulars make a dual, three singulars make a plural, one singular and one dual make a plural, and so on. The category of person, on the other hand, is determined according to the following principles: if there is a first person present in the compound, the whole is first person; if there is no first person but there is a second person, then the compound as a whole is second person; and if there is neither a first person nor a second person, the compound is third person.

With this refinement of our elementary hypothesis we can now summarize the observations for which it accounts in the following statement:

**Subject Person Agreement**

The subject person-marking prefix in the verb word must correspond to the person-number category of the noun phrase which functions as the subject of the sentence in which the verb appears.

As we pointed out earlier, this statement (or rather the grammatical rule corresponding to it) accounts for an unlimited set of Navajo sentences. However, like any elementary linguistic hypothesis, it needs to be tested against all the data which might conceivably be relevant to it. What will emerge in the ensuing pages is that the subject person agreement rule interacts with other rules of Navajo grammar in a somewhat surprising way. While the rule
itself is in all probability correct, it will become evident that there is more to the problem of subject agreement than what we have so far brought into the discussion.

In addition to the phenomenon of person-number agreement between the verb and its subject, there is an additional form of agreement -- also holding between the verb and its subject -- which is specifically concerned with plural number. If the subject of a sentence is specifically plural, as opposed to singular or dual, then the verb is also marked for plural number. In the majority of cases, this plural agreement is represented by the prefix /da-/ (alternating with [de-] under certain phonologically specifiable conditions). Consider, for example, the sentence

(8) hastóí ndaalinísh.

or the sentence

(9) ashiiké ndaalinísh

In these sentences the verb contains the plural prefix /da-/ -- accordingly, the subject noun phraes /hastóí/ and /ashiiké/ are interpreted as plurals. Actually, the forms /hastóí/ and /ashiiké/ are by themselves simply nonsingular -- i.e. they are not necessarily plural -- but where the verb contains the plural prefix, the plural interpretation, as opposed to the dual interpretation, is required. The point is, the prefix /da-/ is itself a marker of plural subject; and as such, it is incompatible with a subject noun phrase which is specifically singular:

(10) *ashkii ndaalísh

This sentence is ungrammatical, because the subject is in a singular form, while the verb is marked for plural subject. And correspondingly, if a subject noun phrase is such that it can only be interpreted as plural, as opposed to singular or dual, the verb must be marked for plural number. This fact can be
illustrated by such sentences as the following:

\[(11) \text{(i) shí dóó ashiiké ndeilnish} \]
\[(11) \text{ashiiiké tált'éego ndaalgish.} \]

In the first of these, the subject is necessarily plural because it is a compound noun phrase consisting of a singular and a non-singular, which amounts to plural. And in the second, the subject is likewise plural since it specifically mentions that three boys are involved. In both sentences, the verb is marked plural as is required.

Let us assume, as we did in the case of subject person agreement, that the plural marker /da-/ is inserted transformationally--i.e., that there is a transformational rule which copies the category

\[\text{[plural]}\]

from the subject noun phrase into the appropriate position in the verb word and that this element is subsequently realized as /da-/ phonologically. According to this suggestion, a sentence like

\[(12) \text{ashiiiké dóó atééké ndaalgish} \]

would have the underlying syntactic representation

```
S
  /\NP
    /\NP
      \NP ashiiké
dóó   \NP atééké
        \adv     \cl     \stem
            na-   -l-   nish.
```

And, since the subject is plural, a rule of plural number agreement would copy the category [plural] from the subject
into the verb word (in this case directly following the adverbial prefix /na-/) where it is subsequently realised as /da-/: 

Ultimately, the verb form here will undergo phonological rules leading to the final phonetic output [ndaalnish].

Assuming this account to be reasonable let us add the following statement to our elementary theory of Navajo agreement:

**Plural Number Agreement**

If the subject of a sentence is plural, the verb agrees with it in plural number.

Although we have not formalized them as such, it is entirely appropriate to think of subject person agreement and plural number agreement as genuine rules of Navajo grammar -- and we will consider them to be just that in the ensuing discussion. Among other things, we will be concerned to answer two questions: (a) Is this all there is to subject agreement in Navajo? (b) How do the two rules interact in Navajo grammar?

It should be kept in mind that where the subject is plural, both of our rules apply. This is not so obvious from a sentence like (12), in which the subject is third person and therefore transmits no overt subject marker to the verb; but it is obvious in a sentence like (11i), where both /da-/ plural and /iid-/

*1st nonsingular* are simultaneously present in the verb word. However, from the evidence we have so far, there is no way to determine the order in which they apply. Thus, starting with a deep structure of the form
it simply does not appear to matter in which order the two rules apply -- all that obviously matters is that the two prefixes get into the appropriate positions within the verb word

and either of the following rule orderings would accomplish this:

(A)
1. Plural Number Agreement
2. Subject Person Agreement

(B)
1. Subject Person Agreement
2. Plural Number Agreement

Thus, the data we have so-far considered leave an important question unanswered--namely, the question as to the precise interaction of the two rules when both apply to the same sentence. There are several possibilities, in fact; for example:

(i) The rules are ordered as in (A)
(ii) The rules are ordered as in (B)
(iii) The rules are unordered
(iv) The rules apply simultaneously
In order to arrive at a solution to our problem, we must determine the implications of these various possibilities and then search for data which might have some bearing on them — i.e., we must search for possible counterexamples. I will begin by considering the last possibility first, since its implications are clearest.

If subject person agreement and plural number agreement apply simultaneously, then we can make the following prediction:

No Navajo verb form will be internally inconsistent with respect to number agreement.

That is to say, for instance, no Navajo verb form could conceivably exist in which the plural prefix /da-/ co-occurred with a singular subject marking prefix — so, /da-/ would not appear in the same verb form as either of the subject prefixes /sh-/ 1st singular or /ni-/ 2nd singular. This follows, because if the two rules applied simultaneously, they would always apply to precisely the same underlying structure, and this would only be one in which the subject was plural — therefore there would be absolutely no way in which /sh-/ 1st singular or /ni-/ 2nd singular could get into the subject prefix position of the verb word; the only possibilities would be /iid-/ 1st nounsingular or /oh-/ 2nd non-singular (or zero, in the case of a third person subject). Now this prediction seems to be born out by the ungrammaticality of such nonsentences as the following:

(13) (i) * shi ndaashnish
(ii) * ni ndanilnish

These are ungrammatical, because the verb forms simultaneously contain plural and singular subject agreement — thus, they are precisely the internally inconsistent verb forms which the theory of simultaneous application predicts should not occur in Navajo. If the data we have adduced so-far proved to be representative of Navajo as a whole, then there would be nothing to contradict the suggestion that the two rules apply simultaneously. This possibility is of some interest, since it may allow us to regard
the effects of the two as being distinct surface manifestations of the same process; and, it may even be possible to collapse them into a single rule in the grammatical description of Navajo.

Whatever analysis we suggest for Navajo subject agreement must be capable of accommodating sentences of the sort represented by (14):

(14) (shí) ashiié bìi ndaashnîsh.

This sentence is grammatical, but it contains a verb form which is internally inconsistent with respect to number agreement—this can be seen clearly from the underlying representation of the verb word:

/na-da-sh-1-nish/.

The presence of /da-/ in this verb implies that its subject is plural, but the presence of /sh-/ in the same verb, implies that the subject is singular (specifically, 1st person singular). Sentence (14), therefore, constitutes a clear counterexample to the suggestion that subject person agreement and plural number agreement might really be the parts of the same process in Navajo grammar. In fact, sentences of this sort are something of a puzzle in any event, for if our two rules both have to do with subject agreement, then how can they produce a result, like the verb form in (14), in which there is a direct conflict in terms of the number category attributed to the subject? In addressing ourselves to this question, let us attempt to determine the structure of (14). Evidently, in its surface structure at least, the subject noun phrase consists of the pronoun /shí/ 1st person singular. This is consistent with the fact that the subject marking prefix /sh-/ appears in the verb. Moreover, if one specifically asked for the identity of the person who is working with the boys by means of a question like /hái lá ashiié yiì ndaalnîsh? /, it would be appropriate to answer with a form of sentence (14) in which the 1st person singular pronoun /shí/
was overtly mentioned. But if the subject is /shi/ 1st person singular, then how is it that the verb contains the prefix /da-/ which normally indicates plural subject? Whatever the answer to this question turns out to be, it is obvious that plural number agreement cannot in any sense be the same process as subject person agreement.

Now if one considers the meaning of sentence (14), and of other sentences in the class it represents, it is not at all unreasonable to say that its verb has a subject which is plural—thus, the sentence asserts that the speaker is working with the boys; the implication of the comitative expression /ashiiké biž/ 'with the boys' is that two or more boys are working in addition to the speaker. Using the same principle of number calculation as we did in the case of compound subjectx, we determine that the number of individuals working amounts to a plural — i.e., a 1st person singular plus a third nonsingular adds up to more than two, therefore plural. Perhaps this is what is responsible for the appearance of /da-/ plural in the verb form of (14). Following this suggestion, we might propose that the rule of subject person agreement is concerned merely with the person-number category of the subject of the sentence, while plural number agreement is concerned with a somewhat more abstract notion — i.e., it is concerned with the number of individuals which participate in the action, state, or process denoted by the verb, whether or not these individuals are represented in the noun phrase which functions as the grammatical subject of the sentence. This is not an unreasonable proposal, by any means. However, it requires us to complicate the plural agreement rule somewhat in order to accommodate so-called comitative sentences — i.e., sentences in which there is a phrase, like /ashiiké biž/, /at'êéd biž/, and so on, denoting co-participation with the grammatical subject in the action, state, or process denoted by the verb. This revision might be stated as follows:
Plural Number Agreement

(1) In comitative sentences, the verb is marked plural if the combined number of the subject and the comitative noun phrase is plural.

(11) The verb is marked plural if the subject of the sentence is plural.

The first clause of this rule applies in the case of sentences like (8, 9, 11, 12). Let us assume that, under this proposal, sentence (14) has an abstract structure of roughly the form given in (14') below:

```
(14')
   S
   /\      /
 NP COMIT V
   /\      /
 NP adv cl stem
 shí ashiiké biš na- l- nish
```

The substructure dominated by the abbreviation COMIT is the comitative phrase, and the noun phrase /ashiiké/ within it is what is referred to as the "comitative noun phrase" in the first clause of the bipartite reformulation of plural number agreement. According to this new conception of agreement, the subject person agreement rule would apply as before and simply copy the person-number category of the subject (1st person singular in the case of (14)) into the verb word. And the plural number agreement rule would mark the verb plural, since the combined number of the noun phrases /shí/ and /ashiiké/ which represent the participants in the activity denoted by the verb, amounts to plural. The structure resulting from the application of these two rules would be:

```
   S
   /\      /
 NP COMIT V
   /\      /
 NP adv cl stem
 shí ashiiké biš na- da- sh- l- nish
```
Subsequent phonological rules would apply to derive the surface phonetic representation of (14).

This revision of **plural number agreement** succeeds in accounting for the seemingly self-contradictory behavior of the category of number in comitative sentences. And, in the process of revising the rule, we have discovered that **plural number agreement** and **subject person agreement** are different processes and could not, in all probability, be collapsed into a single rule. But it should be pointed out that relatively little has been accomplished. In fact, our revision of **plural number agreement** amounts to a complication of it, and we have not succeeded in determining how it interacts with **subject person agreement**. Specifically, we have not eliminated the possibility that the two rules apply simultaneously. Furthermore, while the new formulation of **plural number agreement** accommodates the data observed thus far, it fails to explain anything. It fails to explain, for example, why it is just the comitative expression which plays a role in determining the plural number marking in the verb. Why, for instance, doesn't the comparative have the same effect? Notice that a sentence like /\(sh\)i ashiké bilåahgo naashnish/ 'I am working more than the boys' has an interpretation which, like the comitative sentence (14), implies that the boys, as well as the speaker, are working; yet, in this case, the noun phrase/ashiké/'boys' does not contribute its number to the total which gets represented in the verb word, as is shown by the ungrammaticality of /* (\(sh\)i) ashiké bilåahgo ndaashnish/.

The conception of Navajo subject agreement which we have at this point is minimally abstract. In fact, it assumes that deep structures are essentially the same as the surface structures derived from them, with the simple exception that the verb word does not yet have the "infectonal" morphemes representing the categories of person and number. Suppose we look at the data in somewhat more abstract terms. Could it be, for instance, that the "true" deep
structures of comitative sentences are radically different from their surface structures? If this were indeed so, then it might be reasonable to suppose that our two agreement rules apply to radically different structures -- one equivalent to, or near, the deep structure, the other near the surface-- and that this is what accounts for the internal number conflict in the verbs of comitatives. This possibility might lead to a revival of the simpler form of plural number agreement.

There is something right about the idea that the meaning of comitative sentences is in some way related to their exceptional behavior. In our first attempt to account for this behavior, we incorporated the intuition about meaning into the plural number agreement rule itself. We might now consider the possibility that it should, in part at least, be built into the structures upon which the rules operate. Bearing in mind that the comitative structure carries the meaning that the individual(s) denoted by the comitative noun phrase and the individual(s) denoted by the subject are jointly participants in the activity denoted by the verb, we might propose that the proper abstract representation of a comitative sentence should be one in which this joint participation is explicitly reflected in the structural description itself. This could be accomplished, for example, by proposing a deep structure for comitatives in which the noun phrase appearing in surface structure as a part of the comitative phrase is actually a part of the subject noun phrase. Specifically, we might suggest that the surface subject and comitative noun phrase form a compound noun phrase in deep structure. According to this suggestion, sentence (14) would be derived from a deep structure which is essentially the same as that underlying sentence (lll) -- I repeat that deep structure here as (15):

(15)

```
  S
   NP
  /   \
 NP NP
 shí dōó ashliké
```

```
  /   \
adv c1 stem
 na- -l- -nish
```
If the rule of plural number agreement is allowed to apply to this structure, then the verb will be marked for plural number by means of the prefix /da-/.

This gives

(16)

And if subject person agreement applied next, we would derive (111). However, suppose that, prior to applying subject person agreement, we applied a transformational rule which broke up the compound subject noun phrase by making a new subject for the sentence out of the first conjunct (i.e., /shí/ ) and by converting the remaining part (i.e., /dóó ashiiké/) into a comitative phrase (i.e., into an expression of the form /ashiiké bi/). Form (16), such a transformational operation would derive a structure like the following, approximately:

(17)

If subject person agreement applied at this point, we would derive (18),

1. When a transformational rule introduces material which forms a new phrase with some original constituent, we assume that the new phrase is dominated by a node which is identical to that dominating the original constituent.
which directly underlies (14):

```
(18)  S
     /\   \
    NP NP  V
       \   /  cl stem
      shʃ ashiikept bɨ̂
        na- da- sh- l- nish-
```

In other words, granting for the moment that there exists a rule of conjunct movement which derives comitative structures from compound subjects, we achieve exactly the correct results if we apply the rules in the following order:

1. plural number agreement
2. conjunct movement
3. subject person agreement

Moreover, with this hypothesis we are able to explain why sentence (14) shares with (111) the meaning that both the individual denoted by the pronoun /shʃ/, i.e., the speaker, and the individuals denoted by the noun phrase /ashiikept/ are joint participants in the activity denoted by the verb. They share this meaning, our hypothesis would claim, because they are derived from the same deep structure, and in that deep structure the two constituents /shʃ/ and /ashiikept/ forma compound subject.

We began this discussion by pointing out that a grammatical description of Navajo must account for two sorts of agreement between the subject of a sentence and the verb. We briefly considered the possibility that these agreement phenomena might eventually turn out to be distinct surface manifestations of a single agreement rule; but this possibility was effectively eliminated by a clear class of counterexamples -- namely, the comitative structures -- which demonstrated that the two agreement phenomena are distinct and capable of giving rise to surface structures in which the verb exhibits seemingly conflicting testimony with respect to the number category of the subject.
We then proposed an explanation for the counterexamples according to which this conflicting number agreement is due to the fact that the two agreement rules operate on structures which differ in terms of the identity of the grammatical subject -- in one structure (i.e., that over which plural number agreement is defined), the subject is a compound noun phrase; and in the other structure (over which subject person agreement is defined), the subject is a simple noun phrase. The two structures occur at different points in the derivation of a comitative sentence, and they are mediated by the transformational rule of conjunct movement.

This hypothesis explains quite a lot -- it explains the seeming conflict in the representation of the category of number in the verbs of comitative sentences, and it explains why comitative structures and compound subjects have something in common semantically. But it is a rather extravagant hypothesis, since it posits a transformational rule of considerable power. That is to say, the transformational rule which is central to this hypothesis effects a considerable modification in the structure of sentences -- it takes a compound noun phrase apart, and out of its erstwhile constituents, it makes two new constituents for the sentence, a subject, and a comitative phrase; it is, in short, a rather complex operation. Before we accept the idea that this sort of power is indeed needed in the grammar of Navajo, we should determine the extent to which it is justified. What are the arguments in support of it? One argument is that it succeeds in explaining the existence of verb forms like /ndaashnish/ in grammatical sentences of Navajo. However, the bipartite formulation of plural number agreement, which we briefly considered earlier, also accommodates such verb forms; and that did not require postulation of a complex and powerful transformational operation. To be sure, we had the intuition that the bipartite formulation of plural number agreement (with one clause for comitative structures and another for ordinary sentences) somehow failed to provide a satisfactory
explanation of the problematic verb forms, inasmuch as it suggested no necessary connection between their peculiar agreement and the comitative structure. But this is not a reliable use of intuition, since it is rather unclear (to my mind at least) what it would mean, in a case like this, to say that our linguistic intuitions favor one theory over the other. The conjunction movement proposal is an abstract hypothesis about something which we cannot observe and to which we cannot gain access by exercising our conscious intuitions. We favor it over the competing theory, if indeed we do, not because we have some way of knowing that it is closer to the truth, but rather because it establishes a necessary connection between the comitative structure and the agreement in the verb forms of comitative sentences -- this is of some satisfaction to our "scientific" intuition, our intuitions about what an explanation is, or the like, but not necessarily our "linguistic" intuitions, at least not in the sense of the actual (and unobservable) linguistic knowledge which we, as grammarians, are attempting to characterize. It is advisable, in cases like this, to be somewhat distrustful of the apparent explanatory elegance of an intuitively favored solution and to persist in the search for observable linguistic evidence in support of it. Accordingly, we should attempt to find additional arguments which favor the idea that conjunction movement is a genuine rule of Navajo grammar. The remainder of this section will be devoted to the search for such arguments.

Certain verbs in Navajo have the property that their stems supplet for the category of number -- that is to say, singular, dual, and plural number for these verbs are reflected not only in the prefix system but also in the stem, entirely different stems being used for the different numbers. So, for example, the verbal themes sharing the meaning 'to go, to move' -- particularly of a legged creature' have the (progressive) stem /-dáj/ in the singular, /-'ash/ in the dual, and /-kah/ in the plural. In intransitive verbs, the selection of such stem alternants is apparently controlled by the number category pertaining to the subject of the sentence.
Thus, using the verb just cited, we have in the singular

(19) hastiin yigáá\textsuperscript{1}

and in the dual

(20) (i) hastiin dóó asdzání yi'ash.
   (ii) ashiiiké (ndilt'éego) yi'ash.

and in the plural

(21) (i) hastiin dóó ashiiiké yikah
   (ii) ashiiiké (tált'éego) yikah

In transitive verbs, the selection of suppletive stem alternants is governed by the number category of the object. But, for the present, we will limit our attention to the motion verb just exemplified. For this verb, and for the other intransitives which behave like it, the following statement seems to be warranted by the data.

**Verb Stem Selection**

The stem of an intransitive suppleting verb is selected on the basis of the number category pertaining to the subject of the sentence.

This is in effect a sort of agreement rule, much like plural number agreement, except that it is concerned with the stem rather than the prefix system, and it is not limited to plural number. There can be no doubt about the existence of this rule, for it is needed to account not only for the grammaticality of sentences of the type represented by (19-21) above, but also for the ill-formedness of such sentences as

(22) (i) * hastiin yi'ash
   (ii) * ashiiiké yigáá\textsuperscript{1}
   (iii) * ashkii dóó at'ééd yikah
Since a process of this effect must exist in Navajo grammar, it is natural to ask how it interacts with the other rules which pertain to agreement. Specifically, we want to know whether this process provides any support for our proposed rule of conjunct movement. It happens that, for the intransitive verbs we are examining at the moment, we cannot easily test the interaction of verb stem selection and plural number agreement, since it is not usual for both rules to apply to the same verb -- thus, if plural number is marked in the stem of an intransitive verb, it is not usual to mark it in the prefix system as well; for these intransitive themes, at least, the two processes are mutually exclusive (though they are not mutually exclusive in transitive themes). Fortunately, this circumstance does not hinder our investigation, for it is the interaction of verb stem selection with subject person agreement which provides us with the sort of situation we need to test the validity of our conjunct movement proposal. That these two processes do in fact co-occur in a single verbal derivation is shown by such sentences as the following, in which the verb forms exhibit simultaneously the proper stem selection, according to the number of the subject, and the proper person agreement, marked by means of an overt subject prefix agreeing with the person-number category of the subject:

(23) (i) shí yishááʼí
(ii) ní yínááʼí
(iii) níhí (ndiniilt'éego) yiit'ash
(iv) shí dóó askii yiit'ash
(v) níhí (ndinoít'éego) woh'ash
(vi) ní dúú askii woh'ash
(vii) níhí (tániilt'éego) yiikah
(viii) shí dóó ashiké yiikah

The sentences of (23) conform to the expectation that the stem and the subject prefix will be in agreement with respect to the
number category which they attribute to the stem -- thus, for instance, the verb form in (23i) contains the singular prefix /sh-/ and the singular stem /-áá/: (23ii) contains the singular prefix /ni-/ (modified here by the operation of certain phonological rules) and the singular stem /-áá/: and (23iii) contains the nonsingular prefix /iid-/, which is compatible with the dual stem /-'ash/: and similarly for the other examples in (23). This is the common-sense expectation--namely, that a verb-form will be internally consistent in terms of the number category which it attributes to the subject of the sentence. If this expectation were always fulfilled, then we would never expect to find a verb form like

/yish'ash/,

in which a singular prefix co-occurs with a dual stem -- such a verb form would be internally inconsistent in the number it attributes to the subject. However, such verb forms do occur; and as we might expect, they occur in comitative structures:

(24) (shí) ashkiib bi' yish'ash

In this sentence, the superficial subject is /shí/ lst singular, and the verb is accordingly marked for lst singular subject agreement by means of the prefix /sh-/. But the number of participants engaged in the activity denoted by the verb amounts to dual, and the dual stem is in fact what appears in (24). Now notice that if we assume that conjunct movement is a genuine rule of Navajo, and if we order the rule of verb stem selection to precede it in the grammar, then we can account for the existence of the seemingly inconsistent verb forms like /yish'ash/. The derivation would begin with a structure in which the subject was the compound noun phrase /shí dóó ashkiib/ -- it would have, very roughly, the following shape:
The stem would not have any phonological shape at this deep structure level, because that is supplied by the verb stem selection rule -- and the latter would convert (25) into:

At this point, the subject person agreement rule could apply, inserting the 1st nonsingular prefix /iid-/ into the appropriate position, and thereby deriving (23iv). Or alternatively, conjunct movement could apply first, giving

Then subject person agreement would apply to derive:
And this directly underlies (24)

The existence of sentences like (24) provides considerable support for our conjunct movement proposal. The alternative to this hypothesis would be one in which the deep structure of (24) was a structure resembling (14'1) and in which the verb stem selection rule, like plural number agreement was bipartite:

Verb Stem Selection

(i) In comitative sentences, the stem of an intransitive suppling verb is selected on the basis of the combined number of the subject and the comitative noun phrase.

(ii) The stem of an intransitive suppling verb is selected on the basis of the number of the subject.

The first clause of this bipartite formulation applies in the case of sentences like (24), while the second clause applies in the case of a sentence like (23iv). Thus, this alternative conception, which denies the existence of conjunct movement, involves a considerable complication of the grammar, since both plural number agreement and verb stem selection must, in effect, be stated twice -- once for comitative sentences and once for other sentences. And this state of affairs cannot be improved by collapsing the two rules, for they are different phenomena -- plural number agreement pertains only to subjects, whether the sentence is transitive or intransitive, while verb stem selection pertains to the subject in intransitive sentences but to the object in transitives. And there is another difficulty. Let us assume that the competing alternative would derive (24) form a deep structure of roughly the form
by application of the first clause of the bipartite verb stem selection rule and by application of subject person agreement. Then, in order to account for the fact that the sentence

\[(29) \text{ (shį) ashkii biɣ yishááł} \]

---i.e., with a singular verb stem --- is also grammatical (but with the meaning that the individual denoted by the subject is carrying, or transporting, the boy), the verb stem selection rule must be capable of distinguishing two distinct phrases of the form \([\text{NP biɣ}]\), one which is specifically comitative, and another which we might call transporative. The first clause of the bipartite verb stem selection rule applies only to the comitative (as in \(24\) ), but the second clause applies to the transporative (as in \(29\) ). This would require even greater complication of the grammar. On the other hand, the hypothesis according to which Navajo has a conjunct movement rule, permits us to express the verb stem selection rule, and plural number agreement as well, in the maximally simple way. Moreover, it permits us to account for the difference between \(24\) and \(29\) --- the former is derived from a deep structure in which the subject is a compound noun phrase /shį dọ́ ashkii/, while the latter is derived from a deep structure of roughly the form

\[
\text{NP} \quad \text{NP} \quad \text{V} \\
\text{shį} \quad \text{ashkii biɣ} \quad \text{ghi-} -\phi- [ ]
\]

i.e., in which the subject is /shį/ and the phrase /ashkii biɣ/ is a constituent separate from the subject. We have tentatively given this constituent the form
and further research may require us to change this in some minor way. The essential point, however, is that the deep structure of (29) differs from that of (24) in precisely the way required in order to derive the correct surface forms. If the rules of verb stem selection and subject person agreement apply to (29'), they will correctly give the structure which underlies (29). But in the case of (24), these two rules are mediated by conjunct movement -- the stem shows dual agreement, because the stem is selected before conjunct movement, and the subject person marker shows singular agreement, because it is introduced after conjunct movement.

By assuming that conjunct movement exists in Navajo, we are able to maintain a unitary formulation of plural number agreement and of verb stem selection. We therefore have two arguments in favor of conjunct movement -- that is to say, the behavior of the plural number marker /da-/ indicates that the rule exists, and the behavior of suppletive verb stems also indicates that the rule exists. Or, to state this in another way, the proposal that Navajo has a rule of conjunct movement enables us to explain two different cases of verb forms in which there is an apparent conflict in number agreement:

1. verb-forms of the type represented by /ndaashnish/, and
2. verb forms of the type represented by /yish'ash/

In work of this sort, the more arguments the better. And I have claimed that we now have two arguments for conjunct movement. However one might wish to argue that this amounts to only one argument, because plural agreement and stem selection are very similar phenomena. I have attempted to counter this with the observation that plural number agreement and verb stem selection
cannot be regarded as the same process, since there are important difference between them which, I think, will prevent the two rules from being collapsed with a single one in the formal description of Navajo grammar. Nevertheless it is reasonable to ask if there is any further evidence for conjunct movement. I think that there is, and I will attempt to present it below.

The evidence which I will now consider is concerned with a certain aspect of the transitive verb system, specifically, the reciprocal object. One of the prefix positions in Navajo transitive verbs is occupied by an element which is construed with the object of the verb. Thus, for example, the prefix /yi-/ is the third person object marker in sentences where both the subject and the object are third person:

(30) (i) hastiin awéé' viixozh.
(11) ashkii at'ééd woo'f

(In (30i1), the object prefix is modified by phonological rules, but it is /yi-/ in underlying representation. This prefix is used when the subject precedes the object; if the object precedes the subject, then the third person object prefix is /bi-/), as in: /awéé' hastiin biixozh/, and /at'ééd ashkii boo'f/.) Other object markers are /shi-/1st singular, as in

(31) (i) hastiin (shi) shiixozh
(11) ashkii (shi) shoo'f

/ni-/ 2nd singular, as in

(32) (i) hastiin (ni) niixozh
(11) ashkii (ni) noo'f

and /nihi-/, ambiguously 1st nonsingular or 2nd nonsingular:
(33) (i) hastiin (nihí) nihiįxozh.
(ii) ashkii (nihí) nihoo'į

Like subject prefixes, these object prefixes agree with the person-number category of the noun phrase with which they are construed—subject prefixes are construed with the subject, and object prefixes are construed with the object, as is shown schematically below:

\[
\begin{array}{ccc}
\text{subject} & \text{object} & \text{verb} \\
\text{(shí)} & \text{(ni)} & \text{ni-sh-į-ixożh} \\
\end{array}
\]

(The verb word here would, of course, appear as [nishixożh] after the phonological rules applied.) Thus, Navajo must have a rule of object person agreement as well as the now familiar subject person agreement. I will not be concerned here with the correct formulation of object agreement as a whole, but rather with a small surpart of it. In addition to the object prefixes exemplified above, Navajo also has a reflexive object prefix, whose underlying phonological representation is actually bipartite /á-di-/ . It is used when the subject and the object refer to the same individual(s):

(34) (i) hastiin ádl'ghozh
(ii) ashkii ádoot'į

But the prefix with which we will be concerned in the discussion to follow is the reciprocal object prefix /ahi-/ , as in

(35) (i) hastőį ahi'ghozh
(ii) ashiiké ahoot'į

The reciprocal is used when one wishes to convey the meaning that two or more individuals are acting upon one another, i.e., that they are "reciprocating" in the transitive action or process denoted by the verb. Thus, in (35i), the men are tickling each other, and in (35ii) the boys see each other. Now it is obvious that it takes more than one individual to engage in any action or process which is reciprocal -- one cannot "tickle each other" by oneself, any
more than a single individual could "see each other"; there must be at least two actors in any reciprocal activity or process. This is reflected in (35) by the fact that the subject noun phrases are nonsingular -- if the subjects had been singular, the sentences would have been ungrammatical:

(36) (i) *hastiin ahilghozh
(ii) *ashkii ahoot'í

The requirement that the subject be nonsingular in sentences of the type represented by (35) allows compound subjects, of course:

(37) (i) hastiin dóó wééí ahilghozh,
(ii) ashkii dóó at'éd ahoot'í

And it also allows the nonsingular pronouns for **first** and **second person**:

(38) (i) (nihi) ahilghozh
(ii) (nihi) ahiit'í
(iii) (nihi) ahoíghozh
(iv) (nihi) ahoóht'í

Let us consider for a moment the verb forms of (38). Notice that they contain the **reciprocal object prefix** /ahi-/ cooccurring with the subject prefixes /iid-/ **1st nonsingular** and /oh-/ **2nd nonsingular**. Thus, these forms are exactly what one would expect to be entirely normal in Navajo. For they conform to the requirement that the subject be nonsingular where the object is reciprocal.

Let us express the effect of the reciprocal rule in the following terms:

**Reciprocal Object Marking**

A transitive verb may take the reciprocal prefix /ahi-/ when its subject is nonsingular.

Verb forms like those in (38) are produced automatically by applying **reciprocal object marking** and **subject person agreement**.
Thus, assuming that (381), for example, has at some point in its derivation the underlying structure

(39)

the two process will apply to convert it to

(40)

which directly underlies (381). Now, if reciprocal object marking is essentially correct -- particularly in its provision that the reciprocal is allowed only where the subject is nonsingular--then, on the face of it, one would not expect to find verb forms in which /ahi-/ cooccurred with a singular subject marking prefix, such as /sh-/. But, contrary to this common sense expectation, such verb forms do in fact occur. Thus, in

(41) (i) (shī) askīi biš ḥiṣṭsī
t (ii) (shī) hastīn biš ḥiṣhgsī\n
the reciprocal object prefix appears together with the subject prefix /sh-/ last nonsingular. By now it should be no surprise that the problematic verb forms appear in comitative sentences. And this is fortunate for the hypothesis that comitative structures are derived by means of the rule of conjunct movement -- the existence
of sentences like (41) is entirely consistent with this hypothesis, and moreover it supports the theory that Navajo has a rule of conjunct movement. Applying the rules in the order

1. reciprocal object marking
2. conjunct movement
3. subject person agreement

sentence (41i), for example, is derived in an entirely natural manner. For our purposes here, the derivation can be said to begin with the underlying structure

(42)

(The fact that the verbal theme meaning 'to see' has the aspectual marker /i/- is not essential to the point being illustrated by this derivation.) To this structure, the rule of reciprocal object marking applies to give

(43)

Then conjunct movement applies giving

(44)
Finally, subject person agreement applies to give the structure (45) which directly underlies (41i):

(45)

And, of course, if conjunct movement had not applied, subject person agreement would have converted (43) into:

(46)

which underlies

(47) shi dóó ashkii ahiiltsá

We now have three arguments in favor of the hypothesis that Navajo has a rule of conjunct movement. The theory which we now have involves not only the admission of conjunct movement to the roster of Navajo transformational rules, but also the claim that the rules interact in a particular way. Where conjunct movement applies, it must do so before the rule of subject person agreement. Moreover, it must apply after the other rules we have considered. In short, our grammar must impose the following order of application on the syntactic rules we have considered in this discussion:

1. plural number agreement, verb stem selection, reciprocal object marking;
2. conjunct movement;
3. subject person agreement.
With these rules, and this ordering, we have a suggestive explanation for three distinct classes of verb forms in which there is an apparent conflict in number agreement: (1) verbs in which /da-/ cooccurs with a singular subject marker; (2) intransitive verbs in which a nonsingular stem alternant appears together with a singular subject marker; and (3) verbs in which the reciprocal object prefix /ahi-/ cooccurs with a singular subject marker. All of these problematic verb forms appear in sentences containing the structure we have referred to as the "comitative"; and all of them are explained rather naturally within a theory which holds that the comitative structure is derived from a compound subject by means of a transformational rule, to which we have given the name conjunct movement (following current usage in English linguistics, where a similar rule is proposed).

I have used the example of conjunct movement to illustrate further the observation that the initial appearance of linguistic phenomena is occasionally somewhat removed from the underlying system which we must assume to exist in order to explain all of the data which confront the student of language. The discussion began with a few simple observations about agreement in Navajo. A number of initial statements were made which led naturally to certain common sense expectations about agreement within verb forms. These common sense expectations, however, were falsified by counterexamples. The search for explanations to these counterexamples led to a somewhat more abstract -- and hopefully more accurate -- conception of how agreement works in Navajo. The adequacy of the conjunct movement hypothesis will depend upon the extent to which it remains consistent with an ever increasing range of observable linguistic data. At this point in the science of linguistics, we cannot hope to prove a hypothesis such as this one; we can only hope to find greater and greater support for it.

I would like to conclude this section, as I did the last one, with a "dangling counterexample" -- i.e., a phenomenon which is
not explained by the apparatus we have available at this point. The counterexample in this instance does not contradict conjunct movement. Rather, it is a counterexample to the commonsense expectation that no verb form will be internally inconsistent with respect to the number category attributed to its subject -- but in this case, the existence of conjunct movement simply has no bearing on the problematic verb forms. The solution probably depends on the correct formulation of the agreement rules concerned.

Recall that certain verbs are "suppletive" -- i.e., their stems have distinct alternants selected on the basis of the number category pertaining to the subject (if intransitive) or the object (if transitive). We examined one class of verb forms which exhibited an internal conflict in number agreement -- namely, verb forms like

/yish'ash/

in which a nonsingular (dual in this case) stem alternant cooccurs with a singular subject marker. The existence of these forms was explained by proposing (1) that the stem is selected at an early point in the derivation of comitative sentences, when the subject is a compound noun phrase, and (2) that the subject person marker is inserted at a later time in the derivation, after the compound subject has been broken up (leaving a singular noun phrase as derived subject). Now there is another class of internally inconsistent verb forms -- in these, a singular stem cooccurs with a nonsingular prefix:

\[(48) \begin{align*}
(1) & \quad \text{(niihf) } \text{a' diiđááz} \\
(2) & \quad \text{(niihf) } \text{a' doohááz}
\end{align*}\]

Here, the singular stem /ááz/ appears with the prefixes /ild-/ 1st nonsingular, and /öh-/ 2nd nonsingular. This sort of verb form might be referred to as the partitive -- it is used when the subject denotes a group of which only a part participates in the activity denoted by the verb. In the case of (48), a single individual (/ha'/ 'one') from the group identified by the
nonsingular pronoun /nihi/ is designated as the participant in the action -- the sentences correspond, respectively, to English 'one of us will go' and 'one of you will go.' There is no way in which conjunct movement can be used to explain the existence of the verb forms in (48) -- the solution must be sought elsewhere.

(To be continued)
3. The foregoing sections provide illustrations of the role which counterexamples play in the day-to-day work of grammarians, or theoretical linguists, whether they work in the area of phonology or in the area of syntax. In particular, I have attempted to show the role of counterexamples in the discovery of the abstract principles underlying the strictly linguistic knowledge, or linguistic competence, which enables people to construct and to understand well-formed sentences in their native languages. As we have seen, counterexamples to initial commonsense hypotheses often lead one to propose abstractions which cannot be directly observed—these may be abstract representations of linguistic forms (i.e., structures which are somewhat removed from the way words or sentences are actually pronounced), or they may be abstractions of the type represented by such theoretical notions as rule of grammar, or ordered application of grammatical rules, and so on. In either case, they are abstractions in the sense that they are a part of the theory and can only be inferred from the primary data (i.e., from the sentences we actually hear)—they are not presented to us directly; rather, we must infer their existence from the data which we can actually observe.

I would like now to turn to an additional illustration of this general point. Again, I choose an example which has been briefly introduced in earlier parts of this study—this particular case pertains both to the realm of syntax and to the realm of semantics.

Let us begin by considering simple transitive sentences in which the subject and object are both third person noun phrases:

(49) (i) ashkii at'ééd yiyiltsa.'
    'The boy saw the girl'

(ii) ččič dzaanéez yiztał.
    'The horse kicked the mule'.

Recall that such sentences can be spoken in another way. That is, the order of the subject and object can be switched around, so that the object precedes the subject—when this is done, the object prefix in the verb changes from /yi-/ to /bi-/:
(50) (1) at' ééd ashkii biĩitsá.
    'The girl was seen by the boy.'
(11) dzaanéez íf' biztali.
    'The mule was kicked by the horse.'

Thus, very roughly, a sentence of the form

$$\text{NP}_1 \text{NP}_2 \text{yi-V}$$

can be converted into a sentence of the form

$$\text{NP}_2 \text{NP}_1 \text{bi-V}.$$ 

In this operation, the linear order of the subject and object is inverted, and the object prefix is changed from /yi-/ to /bi-/.

Let us assume for the sake of the present discussion that this operation is a genuine transformational rule of Navajo; and let us refer to it as **Subject-Object Inversion** (or in abbreviated form, **SO-Inversion**). It is not necessary to provide an actual formal representation of this rule, but its syntactic effect can be characterized in roughly the following terms:

(51) **SO-Inversion**

A sentence of the form

$$\text{NP}_1 \text{NP}_2 \text{yi-V}$$

is converted into a sentence of the form

$$\text{NP}_2 \text{NP}_1 \text{bi-V}.$$ 

(The notations yi-V and bi-V are to be understood here as verb words containing the object prefixes /yi-/ and /bi-/ respectively.)

If we assume that (51) is in fact a rule of Navajo grammar, then we must concern ourselves with a number of questions. Among these questions are the following:  (1) Under what conditions does the rule apply? That is, does it apply freely to any sentence having the form NP$_1$ NP$_2$ yi-V, or are there such sentences to which the rule **may not** apply? Are there sentences to which the rule **must** apply?  (2) How does the rule interact with other rules of Navajo grammar? That is, how is it to be ordered with respect to other transformational rules in Navajo?
Before we address ourselves to these questions, let us first consider what the semantic effect of the rule is. Recall that when one converts a sentence like

\[(52) \text{ ḥał' dzaanééz yiztal.}\]

into

\[(53) \text{ dzaanééz ḥał' biztal.}\]

one does not change the **basic meaning** of the sentence. Or to put it in terms which linguists typically use, one does not change the **grammatical relations** which hold between the two noun phrases and the verb—in both versions of the sentence, the noun phrase /ḥał/ is the **subject** and the noun phrase /dzaanééz/ is the **object**. That is, in both versions it is the horse that does the kicking and it is the mule which gets kicked; this basic aspect of the meaning does not change, even though the linear order of the two noun phrases differs in the two versions of the sentence. However, there is a slight difference in meaning between the two versions. The difference is roughly as follows:

Sentence (52), with /ḥał'/ first and /dzaanééz/ second, is a statement about the horse—the horse is, so-to-speak, the primary **topic** of the sentence. Sentence (53), on the other hand, in which /dzaanééz/ precedes /ḥał'/, is primarily a statement about the mule—here, it is the mule which is the primary **topic** of the sentence. Thus, the two sentences differ in terms of what the primary topic of the discourse is. If we think of sentences as consisting of roughly two parts, a **topic** and a **comment**, then we can understand the difference between (52) and (53) as having to do with a difference in the **topic-comment** relationship:

<table>
<thead>
<tr>
<th><strong>TOPIC</strong></th>
<th><strong>COMMENT</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>(52) ḥał'</td>
<td>dzaanééz yiztal.</td>
</tr>
<tr>
<td>(53) dzaanééz</td>
<td>ḥał' biztal.</td>
</tr>
</tbody>
</table>

In other words, sentence (52) is composed of two parts—the announced topic (i.e., /ḥał'/), and then the comment that is made about the announced topic (i.e., /dzaanééz yiztal/). Likewise, sentence (53) is composed of two parts—the announced topic (i.e., /dzaanééz/), and then the commentary about that topic (i.e., /ḥał' biztal/).
Apparently, then, the semantic effect of **SO-Inversion** is to change the topic-comment relationship in transitive sentences of the form \( NP_1 \ NP_2 \ yi-V \). The rule does not change the basic grammatical relationship of subject and object. We must, therefore, recognize two aspects of the meanings of transitive sentences of this type: (1) the basic grammatical relations of subject and object, and (2) the "surface" semantic relations of topic and comment.

Now, it should be clear that we already have available to us the theoretical apparatus to handle this in a natural way. The key notions which are relevant here are those of **deep** or **underlying structure**, on the one hand, and **derived** or **surface structure**, on the other. We can handle the semantics of **SO-Inversion** quite naturally if we assume that the basic grammatical relations are defined at the **deep structure** level and that the topic-comment relationship is defined at the **surface structure** level. To see how this might work, let us consider the common deep structure of (52) and (53):

\[
(54)
\]

![Diagram](image)

We might define the basic grammatical relations of subject and object over deep structures like (54) in roughly the following way:
(55) **Grammatical Relations**

In a structure of the form

\[ \text{NP}_1 \text{ NP}_2 \text{ yi-V} \]

\[ \text{NP}_1 \text{ is the subject and NP}_2 \text{ is the object.} \]

It is to be understood that the principle of interpretation embodied in (55) applies at the deep structure level.

Now, the rule of **SO-Inversion** may or may not apply to (54). If it does not, then the sentence (52) results—i.e., the surface structure is the same as the deep structure. However, if **SO-Inversion** does apply then (54) will be converted into the derived structure:

(56)

\[ \begin{array}{c}
\text{S} \\
\text{NP} \\
\text{NP} \\
\text{V} \\
\text{dzaanééz} \\
\text{iif'} \\
\text{bi-ztał} \\
\end{array} \]

Notice that this will not change the basic grammatical relations of subject and object, since those have already been defined—they were defined over the underlying structure. Therefore, 
\[ /iif'/ \] is the subject, because it was \text{NP}_1 \text{ in the deep structure; and} \text{ /dzaanééz/} \text{ is the object, since it was \text{NP}_2 \text{ in the deep structure.} \]

We can now account for the slight semantic difference between (52) and (53) by applying another rule of interpretation, namely the rule which determines the **topic** of the sentence:

(57) **Topic-Comment Relationship**

In a sentence of the form

\[ \text{NP} \text{ NP} \text{ (yi-, bi-) V} \]

\[ \text{the first NP is the topic and the remainder} \]

\[ \text{of the sentence is the comment.} \]

(Here, the notation \text{ (yi-, bi-) V} \text{ stands for a verb word containing either of the object prefixes /yi-/ or /bi-/.} \text{) This rule of} \]
interpretation applies at the surface structure level, and it accounts for the slight difference in meaning between sentences like (52) and (53).

We have added something to our overall theory of Navajo grammar. We now have not only rules of syntax but rules of semantics as well. Specifically, we have added two rules of semantic interpretation. One of these applies at the deep structure level to define the basic grammatical relations of subject and object, while the other applies at the surface structure to define the relations of topic and comment. In other words, we propose that the grammar of Navajo must include rules of semantic interpretation as well as rules of syntax--rules of semantic interpretation account for the meanings of sentences, while rules of syntax account for the structure of sentences. Moreover, we propose that there is an ordering relationship among the semantic and syntactic rules--some semantic rules precede certain syntactic rules, while other semantic rules follow certain syntactic rules. In the example we have just considered, the rules are ordered as follows:

(58) (i) **Grammatical Relations** (Semantic)
(ii) **SO-Inversion** (Syntactic)
(iii) **Topic-Comment Relationship** (Semantic).

By ordering the rules in this way, we account for the seeming paradox that sentences of the form

\[
\text{NP}_1 \text{NP}_2 \text{ yi-V}
\]

and their inverted counterparts of the form

\[
\text{NP}_2 \text{NP}_1 \text{ bi-V}
\]

are simultaneously the same in meaning and different in meaning. They are the **same** in terms of their deep structure grammatical relations of subject and object, but they are **different** in terms of their superficial topic-comment relationship.
With this introduction, we have now set the scene for an attempt to answer the first of the questions posed above. That is, what conditions must be placed on the rule of subject-object inversion? It would seem that if the semantic effect of the rule is merely to adjust the topic-comment relationship in a transitive sentence, then the use of the inverted or the uninvited form might be expected to be a matter of free choice, depending simply on what the speaker wishes to treat as the main topic of his utterance. Thus, in choosing between the variant (52) and the variant (53), the speaker's usage would depend on what the utterance is primarily about. If the sentence is primarily a statement about the horse, then the variant used would be

(52) żą' dzaanéez yiztał.

On the other hand, if the sentence is primarily a statement about the mule, then the appropriate form would be:

(53) dzaanéez ʐ̃' biztał. This seems to be correct for the examples examined so far. Thus, in similar fashion, the sentence

(59) ashkii at'éd yiyiitsą. is primarily about the boy--i.e., the noun phrase /ashkii/ 'boy' is the topic. While the inverted counterpart

(60) at'éd ashkii biitstsą. is primarily a statement about the girl--i.e., the noun phrase /at'éd/ 'girl' is the topic. In these cases, the choice between the inverted and the uninvited forms is determined according to which of the two noun phrases the speaker wishes to designate as the main topic of discourse. If this were true in general for all such sentences in Navajo, then it would be possible to say that there are no conditions on the rule of SO-Inversion--the rule would apply freely, depending merely on the semantic effect desired by the speaker. However, it is evident that the rule is not in fact freely applicable--there are circumstances in which it may not apply, and there are others in which it must apply. (This fact was mentioned briefly in earlier parts of this study. An initial attempt to characterize the application of this rule was made in Hale, Kenneth "A note on Subject-Object Inversion in Navajo", to appear in
Festschrift for Henry and Renee Kahane, University of Illinois Press; and the conditions on the rule have been further refined in an excellent paper by Mary Helen Cremer (formerly Tapto) "Ranking in Navajo Nouns," presented at the 1971 meetings of the American Anthropological Association).

To see that the application of SO-Inversion is not a matter of free choice, consider the following sentences:

(61) (i) béécháání béets'aa' yiínaad.
   'The dog is liking the plate'
(ii) móísí abé' yiích'áal.
   'The cat is lapping up the milk.'
(iii) askiií tó yídlió.
   'The boy is drinking water.'

Each of these sentences is of the form

NP₁ NP₂ yi-V

and should, according to the provisions of the SO-Inversion rule as stated in (51) above, be capable of undergoing the inversion. However, if the rule applies to the sentences in (61), the results are typically judged ungrammatical by speakers of Navajo:

(62) (i)* béets'aa' béécháání bímínaad.
   (ii)* abé' móísí bítch'áal.
   (iii)* tó askiií bídlió.

Apparently, it is not possible to advance the objects to topic position in the case of sentences like (61 i-iii)--the subject must remain the topic, there is no choice in this case as there was in the case of sentences like (52) and (53). In other words, only the uninverted versions of these sentences are acceptable here. This means that we must impose a constraint on the rule of SO-Inversion to prevent it from applying to sentences of the type represented by (61i-iii).

The precise nature of the constraint which must be placed on the application of SO-Inversion can be arrived at by considering another class of cases. The examples we have examined so far have exhibited the basic linear ordering according to which the subject precedes the object--that is:

SUBJECT OBJECT VERB.
As we have seen, some sentences of this basic form can be inverted so that the object precedes the subject.

**OBJECT SUBJECT VERB.**

This inversion is possible in the case of (52, 53), but it is not possible in the case of (61i-iii). There is yet another logical possibility—i.e., it is theoretically possible that their exist sentences in which the object must precede the subject.

To put this another way, it is logically possible that there exist sentences to which the SO-Inversion rule must apply. This is, in fact, more than a mere logical possibility. There are indeed such sentences. Let us consider, for example, the following sentences presented in the linear order SUBJECT OBJECT VERB—notice that they are unacceptable in that order:

(63)(i) *tsís'ná askii yishish.
'The bee stung the boy'

(ii) *tó dibé yiyiisxį́.
'The water drowned (lit. killed) the sheep.'

(iii) *sá i̱i̱ 'iyiisxį́.
'Old-age killed the horse.'

Instead, these sentences must appear in the inverted form—i.e., they must undergo the rule of subject-object inversion:

(64) (i) askii tsís'ná bishish.
'The boy was stung by the bee.'

(ii) dibé tó biisxį́.
'The sheep was drowned (in the water).'</n
(iii) i̱i̱ 'sá biisxį́.
'The horse was killed by old-age.'

In cases of this type, apparently, the object must be promoted to the status of topic of the sentence. We must, therefore, place a further condition upon SO-Inversion to the effect that the rule is obligatory (i.e., must apply) in sentences of the type represented by (63 i-iii).
If one compares the sentences to which SO-Inversion applies freely with those to which it may not apply and those to which it applies obligatorily, the following picture begins to emerge. Evidently, the application of SO-Inversion is governed by a semantic principle according to which the nominal concepts of Navajo are arranged in a hierarchy, or ranking, with humans at the top and with inanimate and abstract concepts at the bottom. The principle inherent in the hierarchy has to do with relative capability, or relative ability to act voluntarily—humans rank highest along this continuum, animals rank somewhat lower than humans, inanimate objects rank still lower, and abstract concepts (like /s á/ 'old-age,' /dichin/ 'hunger,' /bi l/ 'sleep,' and so on) rank lowest of all. (The subtlety of this hierarchy is well brought out in the paper by Mary Helen Creamer mentioned above.) The application of SO-Inversion is related to this hierarchy in a way which can be characterized in roughly the following terms:

(65) **Conditions on SO-Inversion**

1. The rule applies freely if the subject and object are equal in rank.
2. The rule blocks (i.e., does not apply) if the subject ranks higher than the object.
3. The rule applies obligatorily if the object ranks higher than the subject.

By imposing these conditions on the rule of subject-object inversion, we account for the observations we have made to this point. Thus, for example, in the sentences of (49), repeated here for convenience

(49) (i) ashkii at'ééd yiylítááti.
  'The boy saw the girl.'

(ii) laa' dzaanéez yiztał.
  'The horse kicked the mule.'

the subject and object are equal in rank—in (49i) both are human, and in (49ii) both are animals. Therefore, both sentences may undergo inversion, or not, depending upon the topicalizing effect desired by the speaker. In sentences (61i-i11), on the other hand, the subject outranks the object—hence, in accordance with provision
(ii) of (65), the inversion rule may not apply. Finally, in the sentences of (63), the object outranks the subject—and, in accordance with provision (65 iii), the inversion must apply to give the well-formed sentences (64i-iii).

The unifying principle in the application of SO-Inversion can be stated in terms of the notion "topic of the sentence." In cases of inequality between the subject and the object, the inversion rule either blocks or applies obligatorily in such a way as to ensure that the higher ranking noun phrase appears as the topic in surface structure. For many people, the hierarchy of nominal concepts is extremely sensitive. Thus, concepts which are unequal but relatively close together in the hierarchy are not so resistent to topicalizations which violate the hierarchy as are concepts which are far apart in the hierarchy. For example, humans outrank animals, and while the inverted sentence

(66) ashkii léécháa'í bishxash.

'The boy was bitten by the dog.'

is preferred over its uninverted counterpart

(67) ?léécháa'í ashkii yishxash.

'The dog bit the boy.

the latter is definitely better than a sentence like

(68) *díchín lífi' yiyíísxí.

'Hunger killed the horse.'

in which the object (an animal) greatly outranks the subject (an abstract concept).

I have attempted in this brief discussion of the rule of subject-object
inversion to provide another illustration of the role of counterexamples in linguistic discovery. I began with the observation that there exists a rule converting sentences of the form
\[ \text{NP}_1 \text{NP}_2 \text{ yi-}V \]
into sentences of the form
\[ \text{NP}_2 \text{ NP}_1 \text{ bi-}V, \]
and I attempted to describe its semantic function in terms of the surface-structure notion "topic of the sentence." I assumed initially that the rule could apply freely, depending upon the topicalizing effect desired by the speaker. This initial assumption was then overturned by the observation that the rule is prevented from applying in certain cases (e.g., sentences of the type represented by (61i-iii)) and that the rule must apply obligatorily in certain other cases (e.g., sentences of the type represented by (63i-iii)) -- that is to say, the initial assumption was overturned by certain counterexamples. These counterexamples, in turn, required an enrichment of the overall theory of Navajo grammar to include a semantic principle of rule-government embodied in the provisions of (65). Again, we are required to assume that the grammar of Navajo contains principles of considerable abstractness, principles which cannot be directly observed but which can be inferred from the primary data -- i.e., from the sentences and
from the judgments which native speakers make regarding the well-formedness of these sentences.

4. At this point, I would like to turn my attention to the question of how SO-Inversion interacts with other rules of Navajo Grammar. I will be concerned primarily with the ordering relationship between SO-Inversion and the rule of Conjunct Movement discussed earlier. Specifically, I will address myself to the question of whether SO-Inversion should precede or follow Conjunct Movement. But before we consider this question, it is appropriate to say a few additional things about Conjunct Movement itself.

Recall that Conjunct Movement operates on underlying structures, like (69) below, in which the subject is a compound noun phrase:

(69)

The effect of the rule is to break up the compound noun phrase, making a new subject out of the first conjunct and converting the remainder into a comitative phrase (/ashkii bîl/ in this case). Thus, applied to (69) above, Conjunct Movement would derive the following:
Subsequently, the rule of **Subject Person Agreement** operates to insert the subject-marking prefix into the verb word— in the case of (70), it inserts the prefix `/sh/-` into the subject-prefix position (directly preceding the classifier), in agreement with the derived subject `/shí/ 'I':

(71)

And this derived structure directly underlies the comitative sentence

(72) (shí) ashkii bil naashnish.

'I am working with the boy.'

In our discussion of **Conjunct Movement** in section 2 above, a number of details, inessential to the problems dealt with there, were left unexplained. In order to proceed with the present discussion, it will be necessary to be more precise about one of these details— namely, the structure of the comitative phrase. Consider, for example, the comitative phrase in (70-71), extracted here for convenience:
This consists of the noun phrase /ashkii/ followed by the element /biʃ/-the latter has the meaning 'with him', and it is this element which requires some explanation. Actually, this element is itself complex—it consists of two parts, the object prefix /bi-/, and the postposition /-i/ 'with'. There are many postpositions in Navajo, each having a reasonably clear meaning. So, for example, the sentence

(73) (shí) ashkii b-á hashtaañ.
   'I am singing for the boy.'

contains the 'benefactive' postposition /-á/ 'for,' and the sentence

(74) (shí) ashkii bi-ch'í' yáshti'.
   'I am speaking to the boy.'

contains the 'directional' postposition /-ch'í'/' to'. And there are many others. Each postposition takes an object (the object is /ashkii/ in the illustrative sentences cited above); and, in addition, it carries a prefix which agrees with its object. In the above examples, it carries the third person object prefix /bi-/. However, if the object had been /shí/ 'me', the postposition would carry the object prefix /shí-/, as in

(75) (i) ashkii (shí) shi-ch'í' yálti'.
    'The boy is speaking to me.'

(ii) ashkii (shí) sh- á hataal.
    'The boy is singing for me.'

(iii) ashkii (shí) shi-í naalnish.
    'The boy is working with me.'

And, if the object had been /ni/ 'you,' the postposition would have the object prefix /ni-/, as in:
(76) (i) ashkii (ni) ni-ch'į' váiti
'The boy is talking to you.'

(ii) ashkii (ni) n-á hataał.
'The boy is singing for you.'

(iii) ashkii (ni) ni-į naalnish.
'The boy is working with you.'

In general, then, a postposition carries a prefix which agrees in
person and number with its object. (Postpositions have roughly
the same function as prepositions in English. They are called
postpositions because they follow their objects, unlike the English
prepositions which precede their objects.)

Now, it is a fact of Navajo grammar that the third person ob-
ject prefix has the basic phonological shape /bi-/ whenever the sub-
ject of the sentence is first or second person—see, for example,
sentences (71-73) above. However, if both the subject and the
object are third person, and the subject precedes the object, then
the object prefix appearing on the postposition has the basic phono-
logical shape /yè/-, just as it would if the prefix were in the
verb word. So, consider for example, the following sentences:

(77) (i) at'ééd ashkii yi-ch'į' váiti'.
'The girl is speaking to the boy.'

(ii) at'ééd ashkii y-á hataał.
'The girl is singing for the boy.'

Now let us consider what happens when Conjunct Movement applies
to an underlying structure like (78), in which the compound sub-
ject consists solely of third person noun phrases:

(78)
Since Conjunct Movement introduces a postposition, and since both
the derived subject of the sentence and the derived object of the
postposition are third person, we should expect the object prefix
appearing on the postposition to have the shape /yi-/, just as it
does in (77 i-ii). This expectation is correct, as is shown by
sentence (79), derived by Conjunct Movement from (78):

(79) hastiin ashkii yi-í nālnish.

' the man is working with the boy.'

Thus, the result of Conjunct Movement is a derived structure which
behaves identically to other sentences which have postpositions.

Now consider again sentences of the type represented by (77 i-ii)
above. Notice that they bear a striking resemblance to the kinds
of transitive sentences which are capable of undergoing
the rule of SO-Inversion—that is, they consist of a third person
subject followed by a third person object which is in turn followed
by an element containing the object prefix /yi-/. It happens that
the object prefix in this case is attached to a postposition, rather
than being a part of a verb word -- nevertheless, the resemblance
between sentences like (77 i-ii) and transitive sentences is suffi-
ciently great to encourage us to ask whether or not the rule of
SO-Inversion could be generalized to apply to both cases. Suppose
we attempted to apply SO-Inversion to sentences (77 i-ii). What
should we expect to happen? If the rule could in fact apply to
invert the order of the subject and the object, we should expect
the object prefix /yi-/ to change to /bi-/. And this is exactly
what happens, as is shown by sentences (80 i-ii), derived from
(77 i-ii) by SO-Inversion:

(80) (i) ashkii at'ééd bi-ch'í náltí.

'The boy is being spoken to by the girl.'

(ii) ashkii at'ééd b-
á hataa₁.

'The boy is being sung for by the girl.'

Since SO-Inversion can apply both to simple
transitive sentences of the type examined earlier (e.g. (52-53))
and also to sentences in which the object prefix appears on a postposition rather than in the verb word, it is evident that we must state the rule in somewhat more general terms -- i.e., in roughly the following way:

(81) **SO-Inversion (revised)**

A sentence of the form

\[
\text{NP}_1 \text{ NP}_2 \text{ yi-}(P) \ldots V
\]

is converted into a sentence of the form

\[
\text{NP}_2 \text{ NP}_1 \text{ bi-}(P) \ldots V.
\]

Here, the notation \((P) \ldots V\) is to be understood as any sequence ending in a verb, with or without a postposition (abbreviated \(P\)) preceding the verb. The revised version of **SO-Inversion** is intended to cover both simple transitive sentences, i.e., without a \(P\), and sentences like \((77\ i-11)\), in which the \(P\) is present.

As we have pointed out, a sentence like \((79)\), derived by \textbf{Conjunct Movement} from an underlying structure like \((78)\), is identical in its surface appearance to sentences like \((77i-11)\):

\[
\text{NP}_1 \quad \text{NP}_2 \quad \text{yi-P} \ldots V
\]

\((79)\) hastiin ashkii yi-\(\ddot{a}\) ... naalnish.

\((77i)\) at'\'e\'ed ashkii yi-\(ch'1\)' ... y\'alti'.

\((77ii)\) at'\'e\'ed ashkii y-\'a ... hataa\'al.

And, as we also pointed out, \((77i-11)\) are capable of undergoing **SO-Inversion** -- that is the reason we suggested that the rule should be revised as in \((81)\).

We have now set the scene for an attempt to answer the question as to how **SO-Inversion** should be ordered with respect to \textbf{Conjunct Movement}. Notice that sentence \((9)\) satisfies the conditions of the subject-object inversion rule -- that is to say, it has precisely the right form to enable the rule to apply. The question is, therefore, can **SO-Inversion** in fact apply to \((79)\)? The answer is that it can apply -- if it applies, it gives the following:

(82) ashkii hastiin bi-\(\ddot{a}\) naalnish.

And in general, comitative sentences can undergo **SO-Inversion** --
so, for example, beside
(83) askkii shizhë'é yí-í ní’áázh.
' The boy came with my father' 

one also finds the inverted counterpart
(84) shizhë'é askkii bí-í ní’áázh.

The question now is the following: What does this fact tell us about the relative ordering of SO-Inversion and Conjunct Movement? The answer is, of course, that SO-Inversion must apply after Conjunct Movement. The reason for this ordering is quite clear: Conjunct Movement itself creates the sort of structure to which SO-Inversion applies. In other words, SO-Inversion must wait until Conjunct Movement as applied to derive the structure which satisfies the conditions mentioned in (81). To see this, consider the steps involved in deriving sentence (82). The deep structure of that sentence must have been that given in (78).

Now, it is clear that SO-Inversion cannot apply at this point, because the structure contains no string of the form

$$NP_1 NP_2 y_1(P)...V.$$ 

Such a string does not become available until after the rule of Conjunct Movement has applied to give the derived structure (79). This latter structure does satisfy the conditions for SO-Inversion, since it contains a string of the appropriate form:

$$NP_1 NP_2 y_1-P...V$$

(79) hastiin askkii yí-í...náalnish.

SO-Inversion can now apply to give sentence (82). The very existence of (82) shows that SO-Inversion must follow Conjunct Movement -- if the reverse order were the correct one for the grammar of Navajo, then sentence (82) could not exist.
We have established that the relative order of application of conjunct movement and subject-object inversion should be the following:

Conjunct Movement
SO-Inversion.

Recall that, in the initial discussion of Conjunct Movement itself, it was argued that that rule must be ordered to apply after certain other rules — for example, Conjunct Movement must follow Plural Number Agreement, since the latter depends for its correct application upon the number of the subject in the deep structure. Assuming that this argument is correct, we have enough information already at our disposal to determine the order of application of Plural Number Agreement and SO-Inversion. Clearly, the latter must apply after the former. This follows logically, since if SO-Inversion must follow Conjunct Movement, and if Conjunct Movement must follow Plural Number Agreement, then SO-Inversion must also follow Plural Number Agreement. That is, the ordering must be as follows:

Plural Number Agreement
Conjunct Movement
SO-Inversion.

To test this, we need merely to find a sentence in which all three rules have applied. If we find such a sentence, then it will be clear that the rules must apply in the above order.

Consider, for example, the following:

(85) hastóí ashkii bì-ì ndaalnìsh.

The verb-word contains the plural prefix /da-/; therefore, Plural Number Agreement must have applied. The sentence also contains the comitative postposition /-ì/; therefore, Conjunct Movement must have applied. Finally, the surface structure is of the form

NP₂ NP₁ bi-X;

so SO-Inversion must have applied. Now, if our arguments have been sound, the only way in which this sentence could have arisen is by first applying Plural Number Agreement to the underlying string

(86) ashkii dóó hastóí na-l-nish.
thereby giving
(87)  ashkii dóó hastóí na-da-l-nish (n daalnish).

'The boy and the men are working.'
To this structure, Conjunct Movement applies to derive
(88)  ashkii hastóí yi-l n daalnish.

'The boy is working with the men.'

Finally, SO-Inversion applies to give (85).

We argue, on the basis of this example, that SO-Inversion must
follow Plural Subject Agreement. However, the argument is an indirect
one, since it hinges on the already-established ordering relation-
ship holding between Plural Number Agreement and Conjunct Movement
on the one hand and that holding between Conjunct Movement
and SO-Inversion on the other. It is at

least a logical possibility that the ordering would be different
if Conjunct Movement were not involved in the derivation. Let
us, therefore, examine a case in which only Plural Number Agreement
and SO-Inversion are involved. If it turns out that the simplest
formulation of Plural Number Agreement requires that it apply at
the deep structure level, then we will have doubly confirmed that
it must precede SO-Inversion.

In section 2 above, the rule of Plural Number Agreement
was informally stated in the following terms:

If the subject of a sentence is plural, the verb agrees
with it in plural number.

This must be regarded as an informal statement only since it
does not include within it any formal way of actually locating
the subject of a sentence. Now it is possible to provide a
formal definition of the notion subject in terms of the position
of noun phrases in transitive sentences.
If this formal definition is made at the deep structure level,
then it would be as follows:

(89) Subject Defined at Deep Structure.
The first NP in a sentence is the
subject.

However, if the definition is made at the surface structure
level, it would be somewhat more complex:
(90) **Subject Defined of Surface Structure.**

(1) In a sentence of the form

NP NP bi-V,

the second NP is the subject.

(11) Otherwise, the first NP is the subject.

Clearly, therefore, if the rule of **Plural Number Agreement** truly depends upon the subject, the simplest formulation of the rule can be made at the deep structure level:

(91) **Plural Number Agreement**

If the first NP in a sentence is plural,

the verb agrees with it in plural number.

If this rule were formulated at the surface structure, it would have to be divided into two parts, one part dealing with inverted sentences, the other part dealing with all other sentences.

Now there is an empirical issue involved here—i.e., an issue which can be settled by actual data from Navajo sentences. The empirical question is this: Does the rule of **Plural Number Agreement** depend upon the deep structure notion **subject** or does it depend rather upon the surface structure notion **topic**?

If it depends upon the subject, then clearly the simplest, and therefore best, formulation of the rule would be made at the deep structure level. If, on the other hand, plural number agreement depends on the topic, then it should be formulated to apply at the surface structure, since the topic is defined very simply as the first NP in the surface structure form of the sentence. To repeat, this is an empirical question which can be answered by observing the behavior of **Plural Number Agreement** in actual sentences of Navajo.

Consider in this connection the following sentence:

(92) ashiiké (tált'éego) atééd dayiíitsíg.

'The (three) boys saw the girl.'

In this sentence, the subject is plural, and accordingly, the verb is inflected for plural number by means of the prefix
/da-/ So far, this does not provide us with the information we need, because the plural NP /ashiiké(tált'eeego)/ is simultaneously the subject and the topic -- i.e., the two roles are not distinct here, since the form of the sentence is that which most closely approximates the deep structure. But suppose we apply SO-Inversion to (92). What do we expect to happen? For one thing, the object prefix /yi-/ in the verb word will change to /bi-/. But the important question is this: Will the verb word still contain the plural prefix /da-/? If it does, then we will have proved that plural number agreement depends upon the subject and not on the topic. This follows, because the derived topic will be the singular noun phrase /at'ééd/, which cannot cause plural agreement. If, on the other hand, the plural prefix /da-/ does not appear in the inverted version of this sentence, then it will be clear that the topic rather than the subject governs plural agreement in the verb. Let us, therefore, apply SO-Inversion to sentence (92) in order to determine which of these hypotheses is the correct one:

(93) at'ééd ashiiké (tált'eeego) dabííhatsi.  
'The girl was seen by the (three) boys.'

So far as I am aware, (93) is the correct inverted version of (92), at least for the speakers of Navajo with whom I have discussed the matter. Notice that the verb word in (93) contains the plural number prefix /da-/, in agreement with the deep structure subject /ashiiké (tált'eeego)/. This tells us that it is the subject, not the topic, which governs plural number marking in the verb word. And we can test this further by considering a transitive sentence in which the underlying subject is singular and the underlying object is plural -- e.g.:

(94) ashkii at'ééké(tált'eeego) yiyiiłtsi.  
'The boy saw the (three) girls.'

Here, the verb word lacks the plural prefix /da-/ as expected in view of the fact that the subject is singular. Now, when we apply SO-Inversion to this sentence, we get
(95) at'ééké (tált'éego) ashkii biiłtsá.
'The (three) girls were seen by the boy.'
in which the verb word still lacks the plural prefix /da-/ . Again
this is according to prediction, since it is the subject, not the
topic, which governs the use of this prefix in verb words.

If the rule of **Plural Number Agreement** is formulated to apply
at the deep structure level, it can be given in a form correspond-
ing to the simple statement presented in (91) above. But if (91)
applied at the surface structure, it would give incorrect results --
for example, it would give

(96)*at'éeke (tált'éego) ashkii dabiiłtsá.

which, for many speakers of Navajo at least, is ill-formed.

Assuming that these observations are correct, then we can say
that we have established that **SO-Inversion** must follow **Plural Number
Agreement**. To see how the two rules will operate, let us consider the
derivation of (93) in some detail. The deep structure will be of
roughly the following form:

(97)

```
S
 /\                  /
 |                   |
 NP                NP  V
    /\                /
   |                |   obj  asp  cl  stem
  ashiiké at'éeéd yi- i- i- tsá
```

I have left the word /tált'éego/ 'being three in number' out of
this tree for simplicity's sake -- the NP /ashiiké/ is to be under-
stood as **plural** rather than **dual**. The make-up of the verb word at
this point is not crucial to the illustration. I assume that the
verb is already marked for object agreement, and therefore contains
the prefix /yi-/ . The aspectual prefix /-i-/ (abbreviated asp)
regularly appears in the theme of this particular verb. The classi-
fier is regularly /-i-/, and the perfective stem is /-tsá/. Since
the subject is plural, the rule of **Plural Number Agreement** will apply to this structure. The effect of applying this agreement rule will be to insert the plural-marking prefix /da-/ into the verb word, thereby giving:

(98)

\[
S \quad \text{NP} \quad \text{NP} \quad V \\
\text{pl} \quad \text{obj} \quad \text{asp} \quad \text{cl} \quad \text{stem} \\
\text{ashiike} \quad \text{at'ee'd} \quad \text{da-yi-} \quad \text{-i-} \quad \text{-l-} \quad \text{-tsa}.
\]

The derivation could stop here, giving sentence (92). Or, alternatively, **SO-Inversion** could apply to give

(99)

\[
S \quad \text{NP} \quad \text{NP} \quad V \\
\text{pl} \quad \text{obj} \quad \text{asp} \quad \text{cl} \quad \text{stem} \\
\text{at'ee'd} \quad \text{ashiike} \quad \text{da-bi-} \quad \text{-i-} \quad \text{-l-} \quad \text{-tsa},
\]

which directly underlies (93).

5. In the above discussion, we presented two arguments in favor of the hypothesis that **SO-Inversion** must follow **Plural Number Agreement** in the ordering of rules within the grammar of Navajo. One of these arguments was an indirect one based on the sheer logical consequence of ordering relationships established earlier. The logic was as follows:

Since **Conjunct Movement** must apply after **Plural Number Agreement** and since **SO-Inversion** must apply after **Conjunct Movement**, it necessarily follows that **SO-Inversion** must apply after **Plural Number Agreement**.

And, by finding a sentence in which all three rules apply, it was possible to show that the correct results were achieved by applying the rules in the order determined by this logic -- namely, in the order
Plural Number Agreement
Conjunct Movement
SO-Inversion.

Then we found independent evidence for the relative ordering of Plural Number Agreement and SO-Inversion in the behavior of sentences in which those two rules apply without an interviewing application of the conjunct movement rule. The structure of this second argument had to do with the relative simplicity of the formulation of Plural Number Agreement. Since the crucial data show that plural agreement depends on the subject of a sentence, and since the subject relation is defined most simply at the deep structure level -- i.e., the subject is the first NP -- it follows that Plural Number Agreement finds its simplest formulation (i.e., (91) above) at the deep structure level. Therefore, Plural Number Agreement must precede SO-Inversion, because the latter rule has the effect of changing the underlying order of subject and object. If Plural Number Agreement were formulated to apply after subject-object inversion, it would be necessary to complicate the agreement rule by dividing it into two subrules, one for inverted sentences, the other for uninvited sentences.

I would like to conclude this essay by introducing the basic observations, upon which an additional rule-ordering argument can be built. I will, however, leave the argument itself unfinished, for the reader to construct. The problem in this instance is to determine the relative ordering of the rule of Verb Stem Selection and SO-Inversion. Recall that Verb Stem Selection is responsible for providing the correct verb-stem alternants in sentences like the following:

(100) (i) hastiin yigáái.
'The man is walking along.'

(ii) hastiin dóó ashkii yi'ash.
'The man and the boy are walking along.'

(iii) hastiin dóó ašhiiké yikah.
'The man and the boys are walking along.'
The stem /-áá/ appearing in (100i) is appropriate to singular subjects, the stem /-'ash/ appearing in (100ii) is appropriate to dual subjects, and the stem /-kah/ appearing in (100iii) is appropriate to plural subjects. Not all verbs in Navajo exhibit this suppletive behavior, but there are several that do -- and for those that do, it is necessary to use the appropriate alternant. Thus, while a sentence like

(101) hastiin sidá.

'The man is sitting.'

is well-formed, a sentence like

(102) *hastóí sidá.

is not, since the verb of sitting, like the motion verb illustrated in (100 i-iii) above, is suppletive, the appropriate alternative being selected on the basis of the number category pertaining to the subject of the sentence.

Now, it was argued in section 2 above that the rule of Con-junct Movement must follow the rule of Verb Stem Selection. On the basis of this fact alone it should be possible to construct an argument, logical in form, for the correct relative ordering of SO-Inversion and Verb Stem Selection. And it should be possible to find a sentence in which all three rules apply in order to demonstrate that the logically necessary ordering will give the right result.

It is also possible to develop an argument for the relative ordering of SO-Inversion and Verb Stem Selection without involving Con-junct Movement at all. To do this, it is necessary to find sentences in which Verb Stem Selection and SO-Inversion apply without an interviewing application of Con-junct Movement. In searching for such a sentence, one will be faced with the problem of determining the precise conditions for Verb Stem Selection. In order to apply SO-Inversion without first applying Con-junct Movement, one needs a sentence which is basically transitive -- i.e., which has the underlying form

NP₁ NP₂ y₁-V.
Sentences of this type are common enough. The problem is to find such sentences in which Verb Stem Selection also applies. It is here that the precise nature of verb stem selection becomes apparent. The point is this: Verb Stem Selection does not apply in the same way in transitive sentences as it does in intransitive sentences. In intransitive sentences, as we have seen, the selection of the verb stem is governed by the subject. But in transitive sentences, it is governed by the object. Consider, for example, the following sentence:

(103) léechąą'í dibé yiyíisíf.  
'The dog killed the sheep.'

Here, the transitive verb is of the form appropriate to a singular object -- accordingly, the noun phrase /dibé/ 'sheep' is interpreted as a singular. But if the object were plural, an entirely different verb would be used, as in:

(104) léechąą'í dibé (ashdla'go) neistseed.  
'The dog killed the (five) sheep.'

To summarize, the correct selection of the Navajo verb of killing, depends upon the number of the object, not the number of the subject. Thus, sentence (103), with a singular object, uses the form /yiyíisíf/, while sentence (104), with a nonsingular object, uses the form /neistseed/. Assuming that this is also a matter of verb stem selection of the type already studied, it is clear that the rule responsible for stem selection must be sensitive to whether the verb is transitive or intransitive:

(105) Verb Stem Selection

(1) The stem of a transitive suppletive verb is selected on the basis of the number category pertaining to the object of the sentence.

(2) The stem of an intransitive suppletive verb is selected on the basis of the number category pertaining to the subject of the sentence.

With this in mind, we can now look for sentences to which both Verb Stem Selection and SO-Inversion apply. We do not have far to
look, in fact. All we have to do is apply SO-Inversion to (103) and (104). Applied to the first of these, inversion gives

\[(106) \text{ dibé } \text{lééchq̕w̕}'i \text{ biisx̌w̌.} \]

'The sheep was killed by the dog.'

And applied to the second, inversion gives

\[(107) \text{ dibé (ashdla}'go) } \text{lééchq̕w̕}'i \text{ nabistseed.} \]

'The (five) sheep were killed by the dog.'

The question now is this:

How can these sentences be used to argue the relative ordering of Verb Stem Selection and SO-Inversion? I leave it to the reader to construct argument.
Exercise I

Apply the rule of Subject Person Agreement to the following underlying structures and give the surface forms of the sentences.

(1)

```
S
   /\                \\                \\
 NP  NP         V
     |            /\          \\        \\
    shí  tsé   adv  mode  stem
```

shí tsé ch'í- ni- 'aah

(2)

```
S
   /\                \\
 NP  EP         V
     |            \\
    shí  dóó shiye'  adv  mode  stem
```

shí dóó shiye' kingóó na- si- 'áázh

(3)

```
S
   /\                \\
 NP  NP         V
     |            /\          \\
    ni  chidí   adv  cl  stem
```

ni chidí na- l- baas

(4)

```
S
   /\                \\
 NP  NP         V
     |            /\          \\
    ni  dóó nitsilí  adv  asp  cl  stem
```

ni dóó nitsilí dibé na- ni- l- kaad

(5)

```
S
   /\                \\
 NP  EP         V
     |            \\
    ashiiké  kingóó  adv  mode  stem
```

ashiiké kingóó na- si- 'áázh
Exercise II

Apply the rules of Plural Number Agreement and Subject Person Agreement to the following structures and give the surface forms of the sentences which they underly.

(1)

S

NP

shí
dóó
ashínké
dibé
na- ni- -l- -kaad

(2)

S

NP

ni
dóó
na'áíchíní
yéigo
na- -l- -nish

(3)

S

NP

hastói
dóó
sáanii
nizhónigo
yá- -l- -ti'

(4)

S

NP

shí
dóó
nihí
nizhónigo
ho- -taal

(5)

S

NP

shí
dóó
sha'áíchíní
tooh bii
na- 'i- si- -l- -kóó

(6)

S

NP

dziíghé'í
dóó
kégiizhí

V

obj

cl

stem

SPART

'ahí- -d- -ghé

nt'ée'
Exercise III

Part 1: Apply the rules of Conjunct Movement and Subject Person Agreement to the following structures and give the resulting sentences in their surface forms.

(1) $S \rightarrow NP \rightarrow NP$ $\rightarrow$ adv cl stem
   $\rightarrow$ shí dóó shiyé' $\rightarrow$ na- -l- -nish

(2) $S \rightarrow NP \rightarrow NP$ $\rightarrow$ obj cl stem
   $\rightarrow$ shí dóó shínaái $\rightarrow$ 'ahi- -d- -ghé

(3) $S \rightarrow NP \rightarrow NP$ $\rightarrow$ adv cl stem
   $\rightarrow$ ni dóó nizhé'é $\rightarrow$ na- -l- -zheeh

(4) $S \rightarrow NP \rightarrow NP$ $\rightarrow$ adv cl stem
   $\rightarrow$ shínaái dóó biye' $\rightarrow$ na- -l- -zheeh

(5) $S \rightarrow NP \rightarrow NP$ $\rightarrow$ adv cl stem
   $\rightarrow$ shí dóó ni $\rightarrow$ na- -l- -nish $\rightarrow$ doo

Part 2: Give the surface forms of the sentences which would result from these structures if Conjunct Movement did not apply.
Part 1: Apply the rules of Plural Number Agreement, Conjunct Movement, and Subject Person Agreement to the following structures and give the resulting sentences in their surface forms.

(1)
\[ S \rightarrow NP \rightarrow V \rightarrow \text{adv deic cl stem} \rightarrow \text{shí dóó sha'álchini} \rightarrow \text{na- 'i- -i- -kó'\'} \]

(2)
\[ S \rightarrow NP \rightarrow D \rightarrow NP \rightarrow N \rightarrow \text{adv cl stem} \rightarrow \text{SPART} \rightarrow \text{shí dóó dif ashiiké} \rightarrow \text{na- -l- -nish doo} \]

(3)
\[ S \rightarrow NP \rightarrow NP \rightarrow \text{adv deic asp cl stem} \rightarrow \text{ashiké dóó at'éeéké} \rightarrow \text{na- 'i- ni- -l- -kaad} \]

(4)
\[ S \rightarrow NP \rightarrow NP \rightarrow \text{adv deic cl stem} \rightarrow \text{ni dóó ashiiké} \rightarrow \text{na- 'i- -i- -kó'\'} \rightarrow \text{doo} \]

(5)
\[ S \rightarrow NP \rightarrow NP \rightarrow \text{adv cl stem} \rightarrow \text{SPART} \rightarrow \text{shí dóó nihí} \rightarrow \text{na- -l- -zheeh doo} \]

Part 2: Give the surface forms of the sentences which would result from these structures if Conjunct Movement did not apply.

Part 3: Show how the rules must be ordered in deriving well-formed sentences from these structures. What sentences would result if the rules applied in the incorrect order? Show exactly how the incorrect ordering yields ungrammatical results.
Exercise V

Part I: Apply the rules of Verb Stem Selection and Subject Person Agreement to the following structures -- based on the verbal themes meaning 'to go, to walk'.

(1)

```
(1)      S
        / \                  \
       /   \                /  \\
NP     V                 adv  stem (imperf)
     /  \                  \     \\
shí   na-                   \\
```

(2)

```
(2)      S
        / \                  \
       /   \                /  \\
NP   NP  V                 adv  stem (imperf)
    /   / \                \     \\
shí  dóó  shizhéé'        na-\   \\
```

(3)

```
(3)      S
        / \                  \
       /   \                /  \\
NP   NP  V                 adv  stem (imperf)
    /   / \                \     \\
shí  dóó  sik'ísóó        na-\   \\
```

(4)

```
(4)      S
        / \                  \
       /   \                /  \\
NP   NP  PreVerb            adv  stem (imperf)
    /   / \                \     \\
ní   dóó  niye'   ch'aa     na-\   \\
```

Part 2: Apply the rule of Conjunct Movement to structures (2-5) and give the sentences which result; how must it be ordered with respect to Verb Stem Selection and Subject Person Agreement?

Part 3: What ill-formed sentences would result if the rules applied in the incorrect order?

(5)

```
(5)      S
        / \                  \
       /   \                /  \\
NP   NP  PreVerb            adv  stem (imperf)
    /   / \                \     \\
ní   dóó  na'áichíní  ch'aa  na-\   \\
```

Exercise VI

Part 1: Determine the underlying structures of the following sentences and name the rules involved in the derivation of each -- in their correct order of application.

1. (nihî) dibé ndaniilkaad.
2. (shî) difi ashiiké bîl da'îîta'.
3. shínâ'î (shî) shîl nî'ázh.
4. ashiiké nîzho' nógo dahataaI.
5. ashiiké dóó at'êéké da'ôîta'.
6. mà'iî dóó lééchaq'î naa'aash.
7. (shî) shizhê'é biî sêkê.
8. (ni) nitsilîké biî ndanilnish doo.
9. shî dóó shimá kingôó nshiit'ââzh.
10. at'êéd ashiiké yiî nda'nilkaad.
11. ni dóó nínaalî kînînîgôo dishoo'ââzh ya'.
12. lî'î dóó dzaanéez ná'ahinitâI.
13. shî dóó shá'âchînî na'ñîzhoohîgôö deekai.
14. shî dóó sik'isôô adââdâ'â'' niikai.
15. sitsilî dóó shînaalî ahîgâ.

Part 2: Determine which of the above sentences could undergo the rule of Conjunct Movement. Apply the rule where possible and give the resulting sentences.

Part 3: Assuming sentences (2), (3), (7), (8), and (10) to have been derived in part by Conjunct Movement, give the form in which these sentences would appear if that rule had not applied.

Part 4: So-called "independent pronouns" (e.g., shî, ni, nihî) are normally deleted from the surface structures of sentences unless they receive contrastive emphasis. Let us assume that this deletion is accomplished by an optional rule of Pronoun Deletion. How must this deletion rule be ordered with respect to the other rules we have introduced? Give arguments for each ordering relationship you are able to establish.
Exercise VII

Part 1: Apply the rule of Subject-Object Inversion to the following structures and give the resulting sentences in their surface forms.

1. S
   NP   NP
  móší lééchał'í
   obj mode stem
          yi- si- ghas

2. S
   NP   PP   P
  hastiin ashkii yi- ch'i' yá- -l- ti'
   obj adv cl stem

3. S
   NP   NP
  asdzání ashkii yi- á- 'i- ni- -l- tsood
   obj adv deic mode cl stem

4. S
   NP   PP
  hastiin asdzání yi- á
   obj deic stem
          ho- taal

5. S
   NP   NP
  lééchał'í shilii' yi- si- -l- ghash
   obj mode cl stem

Part 2: Give the surface forms which would result from these structures if SO-Inversion did not apply. State in your own words the subtle difference in meaning between the inverted and uninverted forms.

Part 3: Replace the subject NP in each of these sentences with a plural NP and make any necessary adjustment in the verb word. Give the resulting surface forms for each structure with and without inversion.
Exercise VIII

Part 1: Apply the rules of Conjunct Movement and SO-Inversion to the following structures and give the resulting sentences in their surface forms.

(1) 
```
S
  NP
  NP
shizhé'é dóó shimá
  mode
  stem
  ni- -'ázh
``` 

(2) 
```
S
  NP
  NP
shizhé'é dóó sha'àíchíní
  adv
  pl
  cl
  stem
  na- da- -l- -nish
``` 

(3) 
```
S
  NP
  NP
at'éééd dóó ashiké
  adv
  pl
  deic
  asp
  cl
  stem
  na- da- 'i- ni- -kaad
``` 

(4) 
```
S
  NP
  NP
shína'á dóó sitsonli
  mode
  stem
  si- -ké
``` 

Part 2: Explain why SO-Inversion must follow Conjunct Movement in any derivation which involves both rules.

Part 3: How can the sentences you have derived from (1-4) be used to argue that SO-Inversion must follow Plural Number Agreement and Verb Stem Selection in the ordering of rules in Navajo grammar?

Part 4: Give the surface forms of sentences which would result from (1-4) if only Conjunct Movement applied and not SO-Inversion.

Part 5: Give the forms which would result if neither Conjunct Movement nor SO-Inversion applied.

Part 6: Give the derivation of the following sentence.

(5) at'éééd ashiké bil ndaalnish.
Exercise IX

Part 1: Consider the following structure:

\[ S \]
\[ NP \]
\[ NP \] hastiin \[ NP \] dóó \[ NP \] asdzání \[ V \] mode ni- \[ stem \] -'áázh

How many sentences can you derive from this structure using the transformational rules you know?

Part 2: What rules were involved in the derivation of the following sentence?

naakaii shwáichíní dabiiltsá.

Part 3: Construct a sentence using the following rules:

- Plural Number Agreement
- Conjunct Movement
- Subject Person Agreement.

How would the sentence appear if Conjunct Movement did not apply?

Part 4: Construct a sentence using

- Verb Stem Selection
- Conjunct Movement
- SO-Inversion.

How would the sentence appear if Conjunct Movement did not apply? How would it appear if only Conjunct Movement and Verb Stem Selection, applied without SO-Inversion?

Part 5: Construct three sentences using Plural Number Agreement and SO-Inversion (without involving Conjunct Movement). In what order must the two rules apply, and why?

Part 6: If the following sentences are unacceptable in your judgment, explain why they are so.

1. (\*a) at'éeke ashkii dabiiltsá.
2. (\*b) tsé'édįį ashkii nabilseed.
3. (\*c) dichin dibé yi'nliįąháą́.
Exercise X

A hypothesis is a statement, or "law", or a collection of statements or laws, arrived at on the basis of certain data. Any hypothesis, if it has empirical content, can be tested by confronting it with new data beyond that which led to its construction in the first instance. The hypothesis holds if it accounts for the new data -- i.e., if it makes correct predictions about new data. But the hypothesis fails if the new data proves to be a counterexample to it -- i.e., if the hypothesis makes false predictions about new data.

Let us consider a hypothesis about Navajo grammar which contains the following two statements:

(1) Any sentence of the form

\[ \text{NP}_x \text{ NP}_y \text{ bi-(P)} \ldots \text{V}, \]

in which both NPs are third person, must have been derived by SO-Inversion from an underlying source of the form

\[ \text{NP}_y \text{ NP}_x \text{ yi-(P)} \ldots \text{V}. \]

(2) The rule of Plural Number Agreement operates at the level of deep structure and has the following effect:

If the first NP in the sentence is plural in number, then the verb is inflected for plural number by means of the prefix /da-/.

In what way is the following sentence inconsistent with this hypothesis? That is to say, how does this sentence counter-exemplify the hypothesis?

\[ \text{sha'íichíní aik'éidisí bił daalkan.} \]